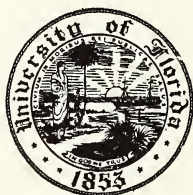


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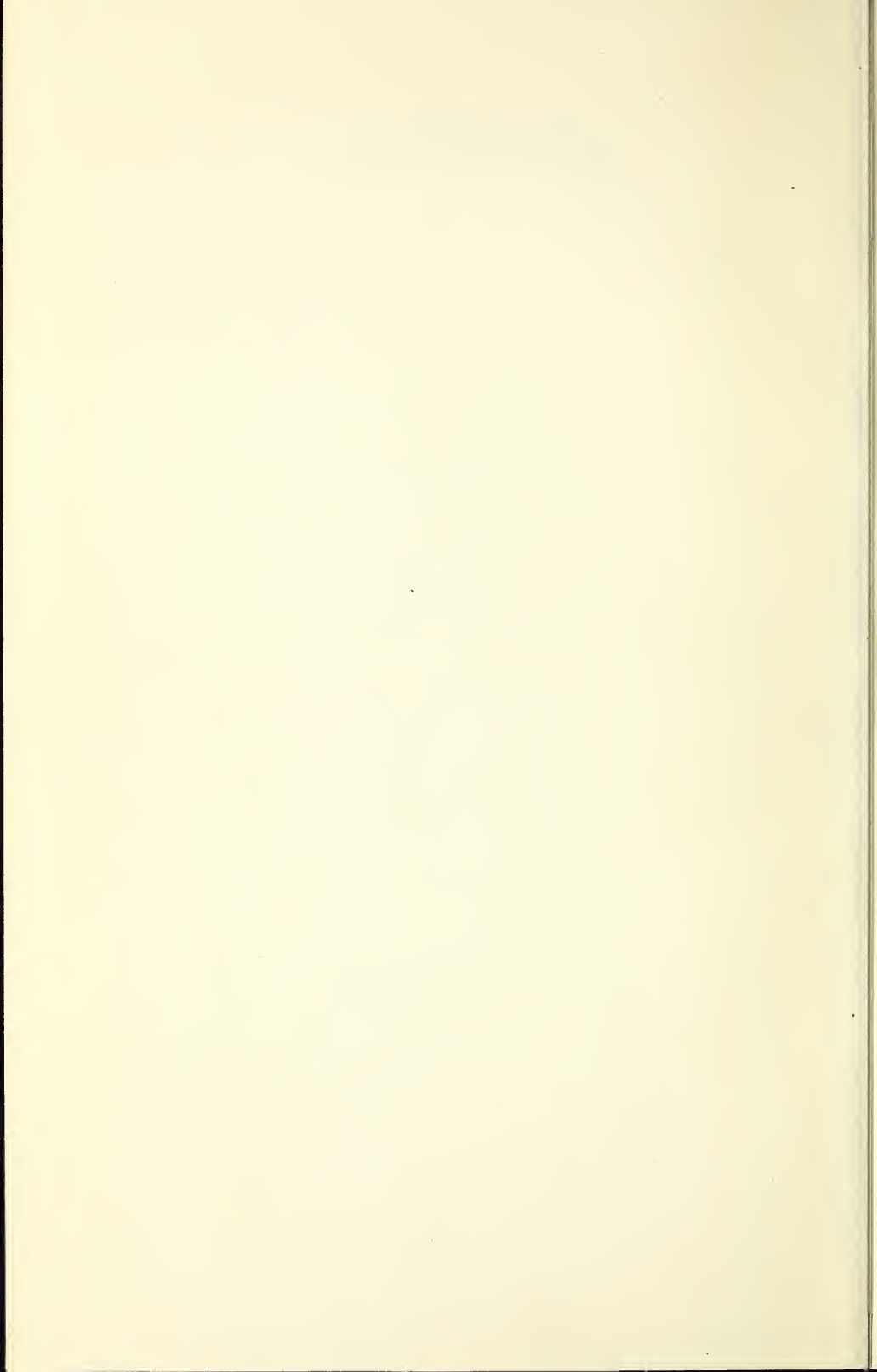
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MALNUTRITION
AND FOOD HABITS



Malnutrition
and
Food Habits

REPORT OF AN INTERNATIONAL AND
INTERPROFESSIONAL CONFERENCE

Edited by
ANNE BURGESS
and
R. F. A. DEAN

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Preface

THE Cuernavaca meeting is the third of a series of international conferences in the field of nutrition in which the Josiah Macy, Jr. Foundation has had the privilege of co-operating with the World Health Organization and the Food and Agriculture Organization. The first was held at the University College of the West Indies, Jamaica, B.W.I. in 1953 and the second at Princeton, New Jersey, in 1955. The overall purpose of the series has been to provide an opportunity for discussion and exchange of ideas among a group of scientists and educators representing a variety of disciplines and cultures, in order to seek areas of agreement, to specify the nature of disagreements, and to encourage co-operative planning.

When the plan of the first conference was being discussed with Dr. Paul György in 1952 it became evident that the insights and techniques of the social sciences, and in particular of cultural anthropology, had not been given an adequate place in both national and international efforts to improve the nutrition of malnourished peoples. It had, however, been recognized that food habits were often deeply embedded in cultural tradition, and that superstition, religious beliefs, and local custom all played a role in the 'resistance to change' often exhibited when efforts were made to improve nutrition by the introduction of new foods or methods of food preparation.

Nutritionists and health educators experienced in field work were well aware of the social and cultural factors involved, but relatively few careful attempts had been made to test the

Preface

significance of cultural factors or to develop systematic procedures to deal with them. Moreover, the relevant world literature on the subject of changing food habits had not recently been gathered for critical evaluation. The need for information had been referred to briefly at the first two conferences but as no specialists in cultural anthropology were present at those conferences the problem was not fully explored.

From such considerations the suggestion for a conference to deal with social and cultural factors in nutrition and food habits, first discussed in 1952, finally came to fruition in Cuernavaca in 1960. As the plans matured it was natural for the Macy Foundation to turn to the World Federation for Mental Health, an international non-governmental body representing many disciplines which has long worked closely with the United Nations and its specialized agencies, to administer the conference. The Foundation is profoundly grateful to the Federation and to Dr. John R. Rees, its Director, who was responsible for organizing the conference.

It also wishes to thank the World Health Organization and the Pan American Health Organization who provided staff members and participants and other support; the Food and Agriculture Organization who sent staff members and contributed to the publication of this report; and the United Nations Children's Fund who sent a representative and provided funds to help with the expenses of travel and the running costs of the conference. Our debt to the individual participants whose interaction with one another in informal discussion made the conference a living reality hardly needs to be expressed.

So great was the interest in the topic of the meeting that it was most difficult to decide who should attend. The number of suggested participants was more than double the number that could be invited if any work of importance was to be accomplished in the time allowed.

Much gratitude is also due to the Secretary of Health of Mexico, Sr. Dr. José Alvarez Amezcuita, who inaugurated the conference, and to our Mexican colleagues who, as well as representing their country's interest in nutrition, were also our hosts.

Preface

The expedition to the village of Tlaltizapan at the invitation of Professor Federico Gómez, to see the work which had been going on under the supervision of himself and Dr. Cravioto, was greatly appreciated by everyone.

Last, but by no means least, I want to express my deep appreciation to Dr. Anne Burgess, who gave so much thought to the preparation for the conference and who, with Dr. R. F. A. Dean, has undertaken the arduous work of preparing the manuscript for publication.

Perhaps the purpose of the conference can best be stated in the editors' own words, taken from the interim report of the conference :

'There is already enough scientific knowledge to bring about considerable improvement in the nutritional health of children in many parts of the world, if it could be widely applied. This knowledge cannot, however, be used where it is needed unless the people themselves want to use it, know how to do so, and are prepared to accept the changes necessary for its effective use. Unfortunately, there appear to be psychological, sociological, and cultural factors which create barriers against rapid changes in food habits, and which are less well understood than the impersonal aspects of nutrition and malnutrition.

'At the conference in Cuernavaca nutrition research workers, paediatricians, public health workers interested in nutrition education, and members of the Secretariats of the international organizations sought the help of anthropologists, psychiatrists, and social psychologists of wide experience, in elucidating the human factors involved in changing food habits.'

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Editorial Note

IT HAS been the practice, at many meetings arranged in collaboration with the Macy Foundation, for a verbatim record to be made of the proceedings. Such a record was made of the two previous meetings that were concerned with the problems of protein-calorie malnutrition, in Jamaica in 1953 and in Princeton in 1955, and of the meeting here reported, in Cuernavaca near Mexico City in 1960.

The editors of the published accounts of the Jamaican and Princeton meetings concentrated on reproducing the informality of the discussions, and succeeded most remarkably in giving a brisk and accurate record of what was said, and even managed to convey how it was said—a literary feat that we, as editors, can now appreciate to the full. We were asked, however, to write a somewhat more conventional account of the Cuernavaca meeting, in which material would be included from background papers, distributed in advance, and the verbatim element introduced only to a minor degree.

We have in fact produced a compromise which, we hope, reflects the conduct as well as the content of the discussions, though it does not always follow their chronological order. It consists mainly of a narrative that is a combination of the background paper prepared by the leader of each discussion (whose name is given at the beginning of the section) and an abbreviated version of his presentation. The names of other contributors to the discussion have been indicated, sometimes at the start of a paragraph,

Editorial Note

sometimes at the end of a sequence that quotes or summarizes the more important of the points made.

Where the narrative is based on the work of small committees set up during the conference, no attempt has been made to identify the contributions of individual members of the committees. Their names also are to be found at the beginning of the section.

We realize that we have eliminated much of the liveliness and vigour that is characteristic of the expression of the views of a carefully assorted group of individuals: we can only hope that the continuity of our version will be a compensation to the reader who, unlike ourselves, did not have the stimulating experience of participation. Our task included a reduction of the length of the original typescript of the proceedings by about four-fifths. We have therefore been forced to omit large quantities of interesting material. We began by pruning much that we felt could be regarded as irrelevant to the topic of changes in food habits, but to keep within our limits of space we had to cut still deeper. We take this opportunity to apologize to all who took part in the discussions for our faults of inclusion, exclusion, emphasis and meiosis, and to record our gratitude for their help in eliminating obscurities and generous acceptance of our editing. We also wish to thank, most warmly, Miss Meininger and her staff who prepared the excellent original transcript, and the friends who acted as our secretaries and uncomplainingly typed and re-typed.

ANNE BURGESS

R. F. A. DEAN

Opening Address

by

HIS EXCELLENCY DR. JOSÉ ALVAREZ AMEZQUITA
Secretary of Health for the Mexican Government

It is my pleasure and privilege to address the select group of prominent physicians, specialists in mental health, sociologists, and anthropologists who have come to my country, Mexico, to attend this international conference on malnutrition and food habits.

The minister of Health and Welfare has a deep interest in malnutrition as a public health problem in general, and in the particular problem of how to provide young children with more protein. As an example of our interest, during the past week, Señora Lopez Mateos, the wife of the President of the Republic of Mexico, invited the wives of the governors of the Mexican states to a meeting to evaluate the work done in the last year in providing breakfasts for school children. The families of the children contribute a small amount of money, twenty cents or, in certain cases, nothing at all.

We consider the psychological, social, and cultural problems of changing food habits to be worthy of the fullest consideration. We know that individuals select their foods according to cultural patterns, and that how these patterns are formed depends on the quantity and quality of available food, on economic status, and on location.

For the most part, Mexican children are breast-fed for many months in the cities as well as in the rural areas, which gives them

Opening Address

a good start. Once the children in the economically weak Mexican families are weaned, however, their diets lack protein because any meat, fish, eggs, or cheese that is bought is eaten by the adults, and little protein is left for the children.

Everyone agrees on the relationship between malnutrition and the ability to learn. There is an extensive programme of protein nutrition among our school children, with the purpose of providing the basic requirements in the breakfasts I have mentioned. The programme has been established throughout the country in the hope not only that the children will build stronger and healthier minds and bodies, but that their improved health and well-being will be an education to their parents. We hope it will also be an assurance of healthier and stronger generations to come.

Mexico has eradicated smallpox and malaria, diphtheria has been reduced to a negligible figure, and a programme is under way against whooping cough and tetanus. But malnutrition continues to be responsible for a substantial proportion of the mortality in the group aged one to four years.

For this conference, some of you have presented proposals on the possibility of improving diet through increased consumption of local dishes which are already known and liked by the people. Naturally, as medical men, we know that this improvement depends on the nutritional quality of the local diet, or the possibility of improving the quality without too much change in the preparation, appearance or flavour. Some people have observed that Mexicans do not like wheat bread. However, it is a fact that in all the rural towns in Mexico one of the ways to celebrate holidays is to buy and eat bread made from wheat. The *tortilla* made from maize (corn) is the national bread of the indigenous population and, since it is cheaper and more filling than wheat bread, it is more abundantly consumed and is the basic food for the lower-economic level Mexican family. It is a pity that maize is not such a good source of protein as wheat.

This brings us to the production of food and to the need for the price to fit the economic level of the people. Our observations show that although it may be difficult for anthropologists, mental hygienists, and public health workers in general to introduce new

Opening Address

or improved patterns of food habits, change would be very rapid and malnutrition would disappear from this country if we were able to improve the agricultural and animal husbandry, together with the economy, so that the good vegetables and the animal proteins were available to the lowest economic levels of population.

I have talked to you in this general way because I want you to understand our problems in Mexico and to know that we consider you as taking part in the fight that President Lopez Mateos is leading against poverty, ignorance and lack of sanitation.



PART I

Aspects of Malnutrition and Food Habits

THE PROBLEM AS SEEN BY
THE NUTRITION SPECIALIST

THE PROBLEM AS SEEN BY
THE SOCIAL SCIENTIST



I

Malnutrition as a Public Health Problem¹

BECAUSE THE World Health Organization is concerned with every aspect of health, it must be concerned with nutrition. In recent years, as the control of communicable disease has improved, the significance of malnutrition has emerged more clearly. The need to understand its causes has become urgent; without this understanding, there can be no secure foundation for schemes of prevention.

It is now evident that in many countries, malnutrition is largely responsible for the high rate of mortality in children. The rate in the group under one year old may be ten times greater than it is in the USA or in most of the countries of Western Europe, but the rate amongst the children one to four years old is up to forty times greater. The chief cause is the combination of disease and malnutrition, the one precipitating and perpetuating the other. Fortunately, improvements in nutrition are more effective against the mortality of the older group. It is reasonable, therefore, to concentrate upon this group much of the resources of money and personnel that are available for public health work in nutrition.

Deficiency Diseases

In addition to general under-nourishment, various forms of

¹Based on a paper prepared for the conference by the Nutrition Unit, WHO (Chief: Dr. R. C. Burgess).

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malnutrition known as specific deficiency diseases are found throughout the world. Some of the diseases are closely related to the monotonous consumption of relatively large quantities of a cereal, such as maize or rice, as the single staple. Thus, pellagra (due largely to lack of niacin) is found where maize forms the bulk of the diet, and beri-beri (due to lack of vitamin B₁, lost in the polishing of the rice) in those rice-eating countries where the grain is not parboiled. Various forms of anaemia, especially those due to lack of iron, are also common in the less-developed countries. Xerophthalmia, a disease of the eyes often resulting in blindness, caused by lack of vitamin A, usually in association with other deficiencies, is prevalent in poverty-stricken communities, particularly in parts of South-East Asia. Goitre, caused by lack of iodine, is endemic in Europe, Asia and the Americas.

It has been amply demonstrated, however, by surveys carried out sometimes by the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO), and sometimes by national teams that the most serious and widespread deficiency disease found today is protein-calorie malnutrition in young children.

Protein-Calorie Malnutrition

Protein-calorie malnutrition is found where diets are habitually poor in protein but provide calories in quantities that vary from gross inadequacy to excess. It is known, under different names, in many parts of the world. One severe form is now generally referred to as *kwashiorkor*, a West African word indicating 'the sickness the child develops when another baby is born', and the name given to the syndrome when it was first described nearly thirty years ago by Dr. Cicely Williams.

Kwashiorkor usually occurs between the first and third years of life. It is essentially a disease of the child who is being, or has been, weaned from the breast, and given a diet composed almost entirely of starchy foods that contain very little protein. The foods are often bulky in relation to their nutritional value, and the child may have difficulty in eating enough to satisfy even his calorie requirements: he cannot possibly satisfy his need for proteins.

Malnutrition as a Public Health Problem

It is only recently that kwashiorkor has been recognized as a syndrome due to protein deficiency. In the past, it was frequently thought to be pellagra, or was confused with marasmus, the wasting that occurs, usually in the first year of life, when the diet is extremely deficient in all its parts, or when a condition such as severe diarrhoea so impairs absorption that in effect, the child starves.

The onset of protein-calorie malnutrition is insidious, and the early stages are not usually recognized: the child is not obviously ill. The acute condition is precipitated by an attack of diarrhoea, an infective illness, or some other stress such as sudden weaning accompanied by separation from the mother. The malnourished child has little resistance to infections, and this probably explains why the mortality of certain infectious diseases is much greater in regions where malnutrition is prevalent than where it is rare.

For each child with frank kwashiorkor in a given area, there are always many others less obviously affected but whose growth and development, and resistance to the diseases of childhood, have been reduced. These children constitute an extremely serious problem, from the public health point of view.

For various reasons, the exact prevalence of protein-calorie malnutrition is difficult to assess. Growth failure is the most characteristic feature, and Dr. F. Gómez, in Mexico City, has suggested a system of classification, based on weight for age. In several areas of Latin America, it has been estimated that less than half the children are within the standard weight range for healthy children, and at least one-fifth show by their weight that they are severely malnourished. A similar state of affairs exists in many other countries.

Causative and Contributing Factors

Protein-calorie malnutrition in young children usually occurs as the result of a number of factors acting on the child directly or indirectly, and with different force in different situations. One basic condition is always present—an inadequate diet. The diet is inadequate because suitable protein foods are unobtainable, or because the available resources are not being used.

The Problem as seen by the Nutrition Specialist

Lack of suitable foods may be due to the low fertility of the soil, to unwillingness to cultivate certain crops that have a high nutritional value, or to want of money to buy foods that would adequately supplement the produce of the family garden.

Poverty affects most severely those who cannot, for one reason or another, grow their own food. In some areas the cost of a litre of milk may be more than 25 per cent of a day's earnings. Poverty may endanger the child's health from the start, if there has not been enough food to ensure the mother's nutritional state during pregnancy and lactation. The men of the rural family may be driven to seek work in the towns, with a subsequent deterioration in the amount and quality of the foods grown by the women, or the mothers may be forced to become wage earners working outside the home, weaning their children early and leaving them inadequately fed during the daylight hours. Though the older children make do on scraps until the evening meal is cooked, the very young child cannot eat enough at that meal to make up for the day's hunger.

Where part of the land is cultivated for cash crops, the money obtained may not be enough to pay for the extra food that must be bought. The effects of alterations in wealth obtained by the sale of exported crops vary greatly. In some countries, the amount of malnutrition decreases when the prices rise, because more good food is then bought: in others, it may increase because a good home-produced food, such as under-milled rice, is replaced by a nutritionally poorer food such as highly-polished rice obtained from the shops.

Failure to use the available resources may be due to a lack of knowledge of the foods that children should and can eat, and of the relatively greater need of the child for the scarce protein-rich items in the family diet—the items that are usually reserved for the wage earner or the respected elder. The distribution of food within the family is a potent factor in the nutritional deprivation of children, and the belief that only adults should eat meat or other 'rich' or 'heavy' foods is not restricted to the poverty-stricken or illiterate peasant family: it is also found in many well-educated families anxious to do their best for their children, and with ample

Malnutrition as a Public Health Problem

means. In many regions, the idea of buying or preparing food specially for children is unknown.

Traditional aversions, prohibitions and beliefs frequently limit the range or choice of foods that might provide some protein for the child.

Where tradition is breaking down, new dangers threaten. Old practices which guaranteed the infant a prolonged period of breast feeding are being abandoned, but with no compensatory improvement in the methods of feeding and weaning. The belief that certain protein foods, such as fish, are harmful to young children probably did not matter much as long as breast-feeding continued for two years, but when mothers wean children early, the belief is dangerous. In many regions, the drift of rural families towards the town deprives them of the familiar mixture of home-grown foods, and ignorance and poverty prevent the purchase of possible replacements.

In some countries the great resource, the capacity of the mothers to feed their children, is being exploited less and less. Where breast feeding is still taken for granted as the normal procedure, the baby usually grows steadily for the first six months and, with luck, continues to do so (though with some retardation of growth and weight gain) for the next year or eighteen months. Even when the mother's diet appears to be inadequate, the child apparently does well for at least the first six months of its life, and if breast feeding continues, with the addition of some food such as soft rice, the risk of protein-calorie malnutrition is reduced. Where, however, there has been some contact with Western ideas, or with shops and a more sophisticated way of life, there is a decline in breast feeding and a growing tendency to wean the child early. The reasons given by the mother are usually that her milk is 'poor' or 'insufficient' or 'does not suit the child'. Health workers have, on some occasions, attributed the practice of early weaning to the malnutrition of the mothers, but there are, apparently, other influential factors.

There seems to be a conviction among some mothers that bottle feeding is socially superior, and that breast feeding is a vulgar peasant practice. Others believe that bought milk must be

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more nutritious, and will make considerable sacrifices to purchase milk for their children. Unfortunately, they can seldom afford to buy sufficient, and the milk is usually much diluted with water that contaminates it. In some countries rice or cornflour is given to eke out the meagre supply of milk (which is usually sweetened) and the child's diet then consists mainly of carbohydrates. Nearly everywhere, the sales of patent baby foods are increasing rapidly. The foods are always very expensive and are often used in quite inadequate amounts.

In various fields where public health measures have been undertaken, the problems have defined themselves more or less clearly; a vector to be eliminated, or a population to be inoculated. We seem to be approaching a time when the chief nutritional problem, protein-calorie malnutrition, is at least becoming obvious. It is highly complex, and it must be approached from all sides: no simple, or universal solution is likely to be found.

2

*Food Supplies and Consumption*¹

THE WAYS in which individuals or groups select, consume and utilize the available supplies of food constitute their food habits; they include systems of food production, storage, processing, distribution and consumption.

The problem of increasing the nutritional value of the diet may be approached in various ways : by an appropriate increase in the production of certain habitual foods of high nutritive value : by the enrichment of common foods with nutrients that do not alter the appearance or the taste; by the wiser use of already available foodstuffs, or by the introduction of new or unfamiliar foods. The first approach is the best, but is a long process conditioned by economic and technical factors. The second has limited possibilities in under-developed countries. The last two approaches offer great opportunities. However, since they involve changes in the traditional dietary pattern, their implementation requires education of the people in nutrition, and this in turn requires a knowledge of the cultural, social and economic factors underlying the existing food habits.

The Inadequacy of Food Supplies

Food supplies are still insufficient in large areas of the world. If

¹Based on a paper prepared for the conference by the Nutrition Division, FAO (Chief: M. M. Autret).

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national averages for calorie intake are compared with physiological requirements for energy, many countries of the Far East, Near East, Latin America and Africa show calorie deficits. For instance, in Latin America, except in the best fed countries, the deficits range from 2 per cent to about 20 per cent. A recent conference estimated that the average calorie intake in Africa should be increased by 10 per cent. However, even when the national average equals or slightly exceeds the calculated requirements, the unequal distribution of wealth causes some sections of the population to obtain far less than their requirements. It was shown recently that in two countries where the supplies were in theory enough for satisfactory average calorie intakes, from 20 to 40 per cent of the populations were still undernourished.

In general, a low calorie intake is associated with other deficiencies, and for an assessment of the overall value of food supplies, factors other than the calorie intake, such as the quantities of protein and other nutrients, must of course be considered. For simplicity, certain nutrients are sometimes used as indicators of the adequacy of the whole diet. Thus the protein intake is a useful guide, not only because proteins are themselves valuable but because protein-rich foods, especially those of animal origin, are usually rich in other nutrients as well; very high and very low intakes of animal protein are usually associated with high and low calorie intakes.

There is a large difference between the amount of animal protein in the diets of economically well developed regions and those less well developed—a difference that seems to have increased in recent years. Unfortunately the lowest levels of protein intake are often associated with high rates of population growth and therefore with large proportions of young people, and since the protein requirements of children are relatively high many children suffer from protein deficiency.

World food supplies are inadequate for the good nutrition of the present population, and must be greatly increased if they are to keep pace with increased population. It has been calculated that for the expected world population in 1980, and allowing for a modest level of improvement, the supply of cereals would have

to be augmented by 50 per cent and that of protective foods by 70 to 90 per cent.

Factors leading to Under-nutrition and Malnutrition

Before they acquire a cash economy, societies live almost entirely on the food they themselves produce, and the nature of their diets is determined by the geographical location, the soil, climate and water supply, and skills in agriculture, hunting and fishing. In the developing countries today, food supplies are influenced also by the facilities available for storing, processing and transporting food, and by purchasing power and food imports. Many of the factors that determine food supplies are related to natural, technological, social and economic factors that deserve careful consideration. FAO is primarily interested in food production at the national level; a national plan, however, is made up of a number of regional plans depending upon the local ecology, local skills and local preferences.

Soil Fertility

Natural factors such as lack of fertile soil or of water may seriously limit food production. In parts of the rich Egyptian delta, yields per acre are falling steadily because of the demands on a limited water supply of an increasing population and expanding industry. In many countries, primitive agricultural methods have ruined what were once rich and fertile regions. Over-grazing, as in the Fertile Crescent, has destroyed the water-retaining cover of vegetation and turned large areas of rich soil to desert. The unchecked cutting of timber to build the once famous capital of Mandalay, over 100 years ago, has left a dust bowl in the surrounding area and an impoverished town in the heart of Burma. The primitive practice of burning bush and forest cover, as a prelude to farming the soil until it is depleted, is still common in many parts of Latin America and Africa today.

The destruction of vegetation also leads to serious fuel shortages. In India, the Middle East, and North Africa, dung has to be burnt because no other fuel is available, although it would be valuable as a fertilizer of the impoverished soil.

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In this technological age, man-made disasters are not irreversible. Given money, skill, time and a supply of fresh water even the desert can be made to bloom, but the investment and time involved in building dams and irrigation systems, the re-afforestation of large areas and restoration of badly eroded soil, and the large-scale planning required to make the best use of land and water, are often beyond the financial resources of the country.

Technology

A high standard of living and varied and adequate diets are as a rule found in those countries where food production per worker and per unit of land is high, and where the farmer enjoys the benefits of technological advances in agriculture, food preservation and marketing. In many newly-developing countries, agricultural methods are primitive, the yield per worker and his income are low, diets are limited, and the standards of health and education in rural districts are inferior to those in urban areas. The poverty of the farmer in many countries is so great that he is still tied to the wooden plough or bent stick of his forefathers.

Increased food production is dependent on soil, water supply, fertilizers, good seed, and the willingness and ability of the farmer to use improved agricultural methods. When he adopts such methods, the results may be striking. Mexico has recently become an exporter of wheat and maize, since the introduction of irrigation and improved seed and the education of the farmer in new methods of cultivation through extension services.

Storage, Transport and Marketing

Adequate facilities for the storage and transport of food, preservation of surplus food, and marketing, help to make the best use of the food supply of the country and to increase the income of the farmer. In self-sufficient communities traditional methods of food storage and preservation meet local needs, and the only problem of food transport is that of taking the produce to the local market. Industrialization, and the growth of urban communities, have brought new problems. Foods of high nutritive

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value, which are often expensive and in short supply on urban markets, such as meat, fish, eggs, milk products, fruit and vegetables, are perishable and present serious difficulties; supplies are wasted as foods spoil, and become insect-infested, for lack of proper storage and efficient transport. It is estimated that in a number of developing countries 20 per cent of the available food is lost; as a result, the farmer's income is reduced and prices paid by the consumer are increased. The scientific improvement of traditional methods of food processing may better serve the needs and tastes of the people in developing regions than canning factories and cold storage plants.

Adequate handling and transport of food can increase the farmer's income by opening up export markets. In one Middle Eastern country, a fine quality of onion can be grown in abundance. It is ready for market six weeks earlier than other onions and could command a premium price on the European market. It has, however, proved impossible to move the crop from the farms to the seaport because of lack of transport, and the farmers, who have suffered serious financial loss, are losing interest in growing the onion for export.

A recent FAO study in Martinique and Guadeloupe demonstrated how food supplies and food costs are influenced by poor marketing. The cost of food imported from France was found to be lower than that of the same food produced locally, partly because of the large number of middlemen involved. To improve nutrition by lowering the price of local foods of high nutritive value, a complete reform of market prices has been recommended to the Government.

Economic and Social Considerations

In developing countries, agriculture plays a major role in the economy, from 50 to 85 per cent of the total population being engaged in agricultural activities. It is well known that unless the farmer can supply the food of at least one family other than his own, his livelihood remains precarious and little cash will pass through his hands. Improvement may come with mechanization and by the increased productivity of fewer farmers with larger

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holdings, but family holdings are often small and frequently grow smaller with each new generation.

The farm family may be virtually unemployed for months each year between the preparation for planting and the harvest. In Yugoslavia, India and elsewhere, rural industries are being established to provide seasonal employment and a small cash income for the farmer. The need for capital, raw materials, suitable skills and an accessible market, makes development of the industries difficult in the countries where they are most needed.

Unjust systems of land tenure are still common. In parts of North Africa, for example, the landlord may claim two, three or sometimes four times the farmer's share of the crop. In a part of the Egyptian delta, the entire wheat crop may be claimed by the landowner as rent, while the farmer and his family subsist on a meagre diet of maize, grown after the wheat is harvested. The wages of farm workers are low and the farm family's diet suffers when milk, eggs and chickens must be sold to obtain salt, sugar, tea, soap, kerosene or clothing, or to pay debts or taxes.

The education of the farmer, through extension services, to understand and take advantage of new laws, new facilities and improved farming methods is beset with difficulties caused by rigid patterns of agricultural tradition.

Since prehistoric times, societies have evolved deeply rooted beliefs based on centuries of trial and error in agriculture. Certain times and methods of tilling, sowing and reaping are thought to foster a favourable relationship between man and nature and to ensure a bountiful harvest. Many of the traditional practices are valid in the light of modern science. Gourou,¹ writing of Togoland, points out that the farmer's fatalistic acceptance of yearly periods of starvation, and his apparent reluctance to try to increase crop yields, is related to ancient folk knowledge that his soil will be exhausted in proportion to the intensity of his farming. Other traditional practices do not take into account deterioration of the soil, seed or water supply. Few permit the

¹Gourou, P. (1953) *The Tropical World*, Longmans, London.

improvement of agricultural technology by the use of fertilizers, insecticides, better equipment, and irrigation.

The typical farmer is deeply conservative. He knows what he can get by traditional methods. He is not convinced that changes will be for the best and in his precarious existence there is no margin for risk. The respect for tradition, the result of centuries of observation and practice, was recently illustrated in the Madagascar rice fields. After the introduction of irrigation, farmers continued the practice of waiting for a certain moon and for rain before transplanting the seedlings. Through the efforts of extension workers, they were persuaded to transplant at the time when the seedlings were ready, even if the moon was not. As a result, the crop was doubled.

Crop failures, epidemics of animal diseases and invasions of locusts are still looked upon as acts of God. It is not known that they may be prevented by methods other than those of the local witch or magician.

There is also a tendency to look for an immediate return rather than a long range one. For instance, a farmer will sell his best animals and keep the poorest ones for the continuance of his herd.

Other cultural factors delay or prevent the introduction of scientific methods of food production. In countries where religion prohibits the taking of life, it may be impossible to promote egg production, to use insecticides to protect crops, or to expand the fishing industry. Other steps to increase food supplies may fail because new products are unacceptable. For instance, a high-yielding variety of the local cereal may give a dough of unfamiliar colour and texture which is held to indicate the woman's inability as a cook. In the Chin States of Upper Burma, the cross-breeding of the small black local pig with a better meat producer gave offspring that were spotted and therefore, by tradition, unfit for eating. Here the error should have been avoided and was rapidly repaired, but the solution is not always so obvious. In the same class of error was the introduction in another country of sorghum to reduce the number of 'hungry months' although sorghum was locally considered to be a food fit only for donkeys.

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Problems of Consumption

Levels of living depend ultimately on levels of income. Relationships between income and the adequacy of the diet can be determined only through expensive and time-consuming surveys. Studies of expenditure on food and other items have illustrated the economic disadvantage of the farmer in relationship to the urban worker in less developed countries. They have also shown the high proportion of the farmer's income that must be spent on food.

In the lower income groups, whose expenditure on food may exceed 50 per cent of the total income, any rise in economic status is usually reflected in an increase in the quantity of food consumed with little change in quality. At higher economic levels, however, increased income usually results in greater expenditure on foods such as meat, eggs and milk products, with a consequent improvement in the nutritive value of family diets. At yet higher levels, expenditure on food may increase further, but this may not result in an improvement in the diet from the nutritional standpoint. Well-to-do families tend to prefer expensive cuts of meat, packaged foods, fruit out of season and other luxuries.

Cultural patterns and education play an important part in determining the proportion of the family income that is allotted to food purchase. An FAO study in progress near Dakar indicates that increased earnings of peasants from the groundnut crop are not spent on food but are used to satisfy a desire for social prestige through bigger and more elaborate weddings, birth ceremonies and funerals. It was observed in New York city during the great depression that Italian families would spend their money first on pasta, oil, cheese and other familiar foods which gave a sense of security, 'forgetting' their other budget items, but that Puerto Rican families in the same income group would buy clothing, a radio, or even jewellery, 'forgetting' to put money aside for food.

When a sudden increase occurs in the income of the poorest and less educated section of the population, a large part of the extra income may be spent on such items as jewels for the wife, bicycles and radios. This was observed in the Gezira area of the Sudan when the average gain from cotton was tripled, between

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one season and the next, by the introduction of irrigation.

Although there is a general tendency for diets to improve with increased income, they may also deteriorate, especially during a change from a subsistence to a cash economy. When cash crops, such as cocoa, cotton or tobacco, replace the traditional food crop, or when families abandon traditional tasks for paid employment, inferior foods such as cassava, or foods that can be bought, replace the better usual diet. In the South Pacific area, the nutritional status deteriorates when copra prices are high because the people buy refined wheat flour, sugar, tinned beef and fish, instead of growing their local foods and catching fish from the lagoon.

If men, the traditional procurers of meat and fish, become wage earners, the amount and quality of protein in the diet may decline sharply. In Basutoland, where men leave their families for work in the mines, the money sent home is not used to improve the diet but is often spent on better housing and clothing. To an increasing extent, women in under-developed countries are also becoming wage-earners and as a result the traditional pattern of home-grown and home-prepared foods is giving way to a diet based more and more on items purchased at the local shop or market.

Many families are abandoning village life to move into newly industrialized areas, thus becoming entirely dependent on wages. Unfamiliar with a money economy, they may have great difficulty in obtaining enough food after paying for rent, clothing and other necessities of urban life. Moreover, they cannot buy in the urban markets the foods of their home villages. Beri-beri was found in Dakar in people from Guinea who were eating rice, as they did at home, but were not getting as much fish and vegetables as they did there. Pellagra was found in Brazzaville among recent immigrants who kept to their traditional cassava flour, but who were not able to buy the niacin-rich cassava leaves in the town.

The Prevention of Malnutrition

The inadequate production or consumption of food affects all the members of a community, and most of all the young children. It is, however, difficult if not impossible to try to improve the nutrition

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of the child without considering the food habits of the family as a whole. Only when the family has enough food of the right quality and uses it wisely, will every member, including the children, be well and economically fed. In the developing countries the majority of the consumers are also the producers. Long-term efforts to prevent protein malnutrition in children will therefore be based on improvements in agriculture and the other aspects of food supplies already briefly described, and on improvements in the levels of consumption and food habits of the families who make up the community and the nation.

3

Malnutrition in its Setting

A. MALNUTRITION IN UGANDA¹

IT is always unwise to generalize about Africa, and malnutrition will be described only as it occurs in one small part of Uganda, Buganda. The two chief tribes are the Baganda, who are the indigenous inhabitants, and the Banyaruanda who are immigrants from the Trust Territory of Ruanda-Urundi across the border to the south-west. For the present purpose, the tribes can be dealt with as a whole, as the Banyaruanda live in a way similar to that of the poorer classes of the Baganda.

The Parents

The parents in the families with malnourished children are for the most part poorly educated, especially the women, of whom very few have progressed beyond the second or third form of the Primary school. The women have an inferior status. If they are walking with their husbands they trail behind at a distance of several yards, and if they stop to talk to a man they kneel. At home, although the husband will sit at a table, the wife will usually sit on the floor with the other members of the family.

The women have no money and very little say in how money is used. The country is gradually moving on to a cash economy and there is increasing interest in cash crops and in paid employ-

¹The discussion was opened by Dr. R. F. A. Dean.

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ment for the men. Whether or not the status of the women will be affected must depend upon the women's education. In the last ten years the number of women at Makerere, the University College of East Africa, has increased from less than 10 to over 50. The better education of the men is probably one of the factors tending to maintain the men in a position of superiority at the expense of the women.

In Buganda the woman has much less influence than she has, for instance, in many Moslem communities. She has no rights at all over her children: the father decides their fate, irrespective of her wishes, because his rights are absolute.

The position of dominance may depend upon tradition more than education, although, of course, tradition may determine who it is that is educated (Rao).

S A I : The position of women in Ghana is completely different from that of the women in Buganda. In Ghana the women have much of the economic power and they wield a good deal of political power as well. It is estimated that 50 per cent of all the taxi cabs running in Accra at present are owned completely or partly by women. There, the education of the men is tending to improve the status of the women.

A L V I M : We have investigated communities in which both the fathers and the mothers are illiterate. The father controls the budget, and we have great difficulty teaching the mother how to use money for food because she is quite unused to taking the initiative in financial matters. This is an instance of the need for the education of the father (Klineberg).

The Collection of Information

The information on Buganda has been obtained partly from observations made in our own hospital and of children in their homes and partly from questioning the parents.

By tradition, the mothers, or sometimes the fathers, stay with the children in hospital. The presence of the parents enables us to undertake various forms of nutrition education. Detailed medical and socio-economic histories are taken, the one by our medically-qualified staff and the other by our nutritionists.

When the child is well, he is taken home with his mother in a Landrover equipped with a tape-recorder on which a record can be made of the details of the route. In Uganda, as in most under-developed countries, there is no system of exact addresses for country districts. We are usually warmly welcomed at the home, because we are bringing back a child who when last seen was very ill and is now greatly improved. Although the privacy of the home is strictly preserved we are allowed to go round the garden, and often even invited to enter the house. Our conversation includes questions that are intended to enable us to form a complete picture of the way of living of the family. Most of our information relates to 51 families of children who were treated in hospital and were then taken to their homes. It has been supplemented by information obtained from interviews at our Child Welfare Clinic or obtained in a study of child rearing that is at present incomplete.

The Agricultural, Economic and Social Background

The community is agricultural, and the chief staples are the plantain, sweet potato and cassava. About half of the 51 families also grew maize as well and about a quarter, millet or sorghum, but those two cereals were used mostly for beer, and were not eaten. The chief high-protein crops were beans and groundnuts, and the chief cash crops, cotton and coffee.

There is almost no storage of food crops. This may be of extreme importance to a child: the high-protein part of the diet may be missing for three or four months, because storage of the groundnuts or beans is impossible. Although means of storage are known, using ash or soil as a preservative, none of the 51 families used any preservatives, and most of them grew the amount of beans that they would eat in about eight or nine weeks. They knew that at the end of this period destruction by insects would be almost complete.

The better-off families were different in many ways from the poorer families. They conserved the soil of their gardens better and attempted some kind of rotation of crops, the gardens were larger and better kept and had been held in tenure for longer periods. Their cash crops were better in quantity and quality.

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Their houses were roofed with tin or corrugated iron and divided into four rooms or more, whilst there was a separate outhouse for cooking and sometimes another one that was a guest room. They kept more cattle and other animals but only one family used any of the milk that came from their cows. The poorer people grew a larger proportion of staples in the gardens and whenever they could concentrated on cash crops although their gain from these crops was seldom very great. They usually had to be content with land that was either at the rocky tops of hills or deep in the swampy valleys. The better-off people had several sources of income, not only coffee but also cotton and beer that was made for sale. Two of the wealthier families had cars, one had a motor-scooter and one a motor-bicycle. Two had wireless sets or radios and most of them had bicycles. The poorer families had none of these amenities. All the families bought sugar, salt and tea and many also bought rice, maize meal and bread. Even the staples, especially plantains, had sometimes to be bought, and groundnuts or beans.

The wealthier people said they bought more meat and fish than the poorer ones, but the prestige value of meat undoubtedly led to exaggeration. The wealthier families had meat at most week-ends, when they usually ate it at four consecutive meals. Fresh and dried fish were available but were expensive. The wealthier people had more milk, but the nutritional value of the milk was doubtful because it was used almost entirely to make the tea they drank slightly opalescent. Milk was seldom used otherwise, although it is recognized as a good food for a sick woman or child—an idea that may be derived from contact with Europeans (Sai). In this way Uganda is unlike Central America where milk is considered an appropriate food until the child is sick, when it is withdrawn (Scrimshaw).

Polygamy depends upon wealth, and in one family there were five wives. There was a great difference in the survival of the children in the wealthier and poorer families. In the wealthier group, there had been at least 87 children, of whom only four (4.5 per cent) had died; in the poorer families there had been 84 children, of whom 22 (27 per cent) had died. The information obtained suggested that one of the four deaths in the wealthier

groups had been due to kwashiorkor, but in the poorer families eight of the deaths had been due to that disease. This difference in mortality between wealthier and poorer groups has been confirmed in other studies that have been made in the local populations.

The Feeding of Children

There are two main meal times, one near midday and one in the evening or at night. Obviously small children are often too tired to eat well at the night meal. Nearly all the food is steamed in plantain leaves, and served in them. Cotton seed oil was bought to mix with the food when it could be afforded.

The chief nutritional troubles seem to be that the child at weaning is given too much of the staples and too little of the high-protein foods. He may get some groundnuts and beans, but usually no more than the gravy of the meat. Fish is not usually given to children because the mothers think that fish bones are dangerous, and cheap fish in Buganda usually contains a great number of small bones.

There is no concept of deficiency disease. There is no recognition of the special needs of young children for foods that contain plenty of protein, no special preparation of food for children and no idea that any expense of money on the child is necessary before school age.

The child is expected even at a very early age to be able to feed himself by taking a handful of the staple, putting it in the high-protein sauce, and conveying it with some of the sauce to his mouth. The manipulation is obviously difficult, and the nutrition of the child must depend largely on the way his feeding is supervised.

There is a failure to recognize the concept of quality in food that is part of a general failure to understand the importance of quality in contrast to quantity. It is possible, however, that the better prices that are obtainable for good quality cotton, coffee and other crops may be helping towards a realization of the value of quality.

As in most parts of Africa, lactation is usually excellent and the

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child who cannot be breast fed nearly always dies. So long as the children are being reasonably well fed from the breast, they are magnificent. Trouble does not generally begin until the child is weaned on to the inadequate diet that has been described, but the amount of marasmus is increasing because the ability to lactate is decreasing. Here the difference between the richer and the poorer families is important because the greater the sophistication, the worse the lactation. The wealthier Baganda, the more sophisticated, lactate for a shorter time than the less sophisticated Banyaruanda immigrants.

In the 51 families there were two children who appeared to have suffered from Western teaching. One was not fed too often because the mother thought 'She would have drained me of my milk', and the other was fed at regular intervals on the advice of a local midwife.

Weaning is often hastened by the mother's renewed pregnancy or by her mistaken belief that she is pregnant. There is a curious idea that a pregnancy may extend over periods up to about three years, with fairly lengthy interruptions. If a mother thinks she is pregnant and stops breast feeding, the results may be disastrous. Sometimes breast feeding is stopped at the twelfth month because it is thought that milk is not good for the child in the second year.

There is no relation at all between the length of the period of lactation and the onset of kwashiorkor. If the breast feeding is prolonged the onset of kwashiorkor may be delayed, but that is all. This observation confirms other observations that have been made, to the effect that kwashiorkor results from the simultaneous operation of a number of misfortunes, rather than from a single one.

Kwashiorkor

There are two local names for kwashiorkor. One is *obwosi*, which is used if the mother is pregnant. The disease is recognized by the pale hair, sweating of the feet and hands, fever, diarrhoea and vomiting. The importance of pregnancy is such that if a woman takes a sick child to a native doctor the first question he asks is 'Are you pregnant?' and he examines her breasts to see if they

confirm the diagnosis. It is believed that *obwosi* is caused by the jealousy of the unborn child, and the weaning of the child who is already born is necessary because the unborn child will poison the milk. If the unborn child is the third child it is thought that the first child is safe. In fact, he is probably safe, because he is over three years of age and in our communities kwashiorkor is much rarer after three years than before. *Obwosi* is not only to be feared if the mother of the child is pregnant, but also if another wife is pregnant.

If the mother is not pregnant the disease has another name, *omusana*. The disease is then thought to be associated with cold, especially at night and perhaps because the child has been put in the cold away from the mother's bed.

The Multiple Causes of Malnutrition

There seems to be a multiplicity of causes, nutritional, social, psychological and medical in almost all our cases. Bad nutrition appears to be of relatively greater importance in the poorer families. The basic requirement for kwashiorkor in Buganda is always an inadequate diet: the factors other than diet become more important as the social and economic scale is ascended.

(a) Psychological Causes

In the poorer families there was less separation of the children at weaning from their parents. The most common cause of separation was the realization by the mother that she was pregnant, and her belief that the child would be harmed by contact with her. Some mothers used separation as a means of ensuring the end of lactation. Sometimes, the mother ran away leaving the child with the father. It is unusual for a mother who runs away to take a child with her because, as already mentioned, the fathers have absolute rights over the children.

It is customary to send children away from their homes during their second year even if the mother is not pregnant. An elderly woman relation can say she is living alone and wants a child with her, and can take a child away. The separation is always without any consideration for the emotional needs of the child. In the 51

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families there were 18 children who had been sent away from their mothers at this difficult age, and in whom the separation was believed to play an important part in the precipitation of kwashiorkor. Of the 18, fourteen were Baganda. The custom is much more common amongst that tribe than amongst the Banyaruaanda.

The 18 children were separated geographically, but separation may occur without the child leaving home. In the local culture it is essential that the mother should devote herself to the unborn child or a child recently born, at the expense of any other children; there does not seem to be an easy acceptance of the idea that there can be enough love for all. A child who is rejected by his mother tries to reinstate himself in her affections or at least to force his mother to take some notice of him. One of the simplest methods of ensuring attention is to refuse to eat well, and this method is often used. It seems that many children become malnourished simply because there is no one who will help them at meal times.

The change in the attitude of the mother is expressed in another way. Until the time of weaning the child lives in constant physical contact with his mother; the feel of her naked skin must represent security to him. When he loses that physical contact, when he is no longer allowed to sleep in his mother's bed, and most of all when he realizes that her attitude to him has changed, he suddenly finds himself in a different world. This occurs at an age when he is making his first explorations of the outside world and more than at any other time requires a safe and secure base to which to return.

P O O R W O : Is the attitude towards separation the same in the wealthy or more educated families?

D E A N : The sending of children away is an extremely common practice, but it is being followed less regularly nowadays by the more enlightened classes. In the groups in which kwashiorkor occurs it is still common.

S A I : Are the changes in the extended family situation, and in the amount of polygamy, important factors?

DEAN : There seems to be more chance of a child surviving intact in a polygamous household than in a monogamous one, because he has a better chance of finding a mother substitute. There are young children available who can act as nurses but they usually seem to be inadequate substitutes for the real mother.

SCRIMSHAW : Although we are very much concerned about the operation of psychological and social factors on the attitudes of the mother and her handling of the child, we feel that the child develops kwashiorkor because he is buffeted about by these environmental circumstances, and not because of his own mental reaction to them. In other words, that the development of kwashiorkor is determined by the environmental factors, not by the reaction of the child.

MEAD : There seems no need to assume that a failure to consume adequate food stems from only one source. In other circumstances and in other countries the child who refuses to eat may starve and die, but it seems that the children who get kwashiorkor do so only under certain conditions that include the continuous presence of food that is inadequate.

GYÖRGY : Although we do not see kwashiorkor in the USA, we see under-nutrition in rejected children who ruminate and vomit. Even the least psychologically-inclined paediatricians now accept that rumination has a psychological basis.

SAT : There is danger that we may apply Western methods of psychiatry or psychology to African situations. Youngsters are trained for the societies in which they live and we should ask whether the apparent 'cruelty' to the child is bad for him or bad for society. In the old days if a mother died the child she was breast feeding was sometimes buried with her. That may be shocking to the Western-trained mind and described as 'cruelty', but is it not possible that such a practice could stem from a very primitive community's inability to raise a motherless child without jeopardizing the life of another child whose food the orphan would have to share?

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(b) Social Causes

We have many instances of social causes that are believed to be of importance in the development of kwashiorkor. One mother brought in two children who were dying and explained that she could not bring them earlier because being a widow she had been unable to find any man in the right relationship to her to give her permission to bring them to hospital.

In another case the father had died, and his brother, who was responsible for the child, took her away from the mother to his own mother. In fact, the grandmother did not seem to want the child, but when the widow re-married, her new husband refused to allow her to bring the child back.

Another child who seemed to be very deprived was living with his father, his mother having run away, but the father's new wife was pregnant and refused to look after him. The father's sister also refused to look after the child. Finally, the child was adopted and died a week after the adoption. There was no clear evidence that the adoption caused the death, but it seemed probable that the child's chances of survival would have been better if he had been able to stay with his own mother.

One woman who came in to hospital with her child said that she was not his mother, but his aunt. She was intending to marry a man who would not have her if she admitted that she had this child. The child was taken from relation to relation, and altogether returned to us four times for treatment of kwashiorkor. In a whole year he made no advance in development according to the Gesell test. He did not increase in weight either, and only a very small amount in height.

Sometimes, as in the case of another child who was admitted for treatment three times, the incompetence of the mother seems an important factor.

ZUBIRÁN : Does alcoholism play any part ?

DEAN : Yes, partly because it diverts money that could be used in other directions and partly because it may lead to the ill-treatment of the wife.

(c) *Medical Causes*

In addition to the psychological and social causes there are important medical causes of kwashiorkor: they seemed to be more important in the poorer families than in the richer. The chief were gastro-enteritis, diarrhoea and vomiting from various causes, and measles. The medical causes were seldom found alone; usually in an individual case there were several of the other factors that have been mentioned. There is an old Chinese proverb which says 'We cannot prevent the birds of sadness from flying over our head, but we can prevent them from nesting in our hair'. The birds of sadness are always flying over the head of a child who is running the risk of kwashiorkor, but it takes a cluster of them, perching on the shoulders, to bring the recognizable illness.

The possibilities of improvement can only be summarized here in a short list. Perhaps on the nutritional side the most important thing is the education of the parents, including the fathers and grandmothers, in the recognition of the special nutritional needs of children. Small-scale agriculture must be improved, although improvement has been attempted for 15 years with almost negligible effect. Some means might be found for the amalgamation of holdings so that mechanized methods could be introduced advantageously. For the time being, a cheap high-protein supplementary food seems to be necessary but it should be regarded only as an interim measure. On the psychological and social side it is obvious that improvement has to wait upon great changes. There must be an improvement in the status of women and a modification of the attitude of the father towards his rights over the children. On the medical side the better recognition of early cases, and the bringing of such cases to hospital will certainly greatly reduce the mortality of the disease.

B. MALNUTRITION IN SOUTH INDIA¹

In the four provinces of Kerala, Madras, Mysore and Andhra Pradesh in South India, the total population is approximately one hundred million, of whom 86 per cent form the low income group

¹The discussion was opened by Dr. K. Someswara Rao.

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to which I am going to confine myself. Of the hundred million 80 per cent live in villages.

The Nutritional Problems

The nutrition of the women of child-bearing age is nearly always very poor. Measurements made on the dietary intakes of pregnant women indicate an average daily calorie intake of about 1750 and an average protein intake of about 49g. Lactating and pregnant women, and women who are neither lactating nor pregnant have similar intakes. In a clinical examination of over 900 women we found an average weight of about 93 lb. (42 kg.) which is the weight of a standard American girl 11 to 12 years of age. The gain of weight during pregnancy is from 6 to 12 lb. (2.7 to 5.4 kg.) which is only half that found in some of the well-to-do countries, and the maternal mortality rate is about 20 per 1,000, forty times more than is reported in the USA. The birth weight of the children is about 6 lb. in the lower income groups, and 7 lb. (3.2 kg.) in the higher income groups. In the first group about 38 per cent of the babies weigh less than $5\frac{1}{2}$ lb. (2.5 kg.) at birth and in the other group about 12 per cent.¹

The mortality in the first year of life is four to five times greater than it is in countries like the USA or the UK, but the mortality rates in the pre-school age group are 20 to 30 times greater. About 30 per cent of the total deaths in the area occur in children under five years of age. About 20 per cent of the deaths in the first year, and about 60 per cent of the deaths in the second, are from kwashiorkor. Much of the information on deaths was obtained by house-to-house visiting, but most of the mothers volunteered the statement that oedema with or without skin changes was associated with the illness that caused the child's death, and we therefore believe the diagnosis of kwashiorkor is reasonable.

A comparison of the growth of the Indian children with that of American children shows that there is hardly any difference for

¹Varkki, C., Venkatachalam, P. S., Srikantiah, S. G., and Gopalan, C. (1955) Study of birth weights of infants in relation to the incidence of nutritional oedema syndrome (kwashiorkor). *Ind. J. Med. Res.*, Vol. 43, p. 291.

the first six months, but that afterwards the Indian children fall away from the American standard, and nearly 70 per cent of them do not even reach the tenth percentile below the standard weight. The skeletal system shows the same kind of retardation, and in 800 children whose serum proteins were estimated about 20 per cent had a serum albumen concentration of less than 3 g./100 ml.

About one per cent of the children aged one to five years who were examined had signs of kwashiorkor. The disease accounts for up to 16 per cent of the admissions to the various paediatric hospitals. It is likely that the true incidence is more than one per cent, but even if it is so low, the total number of cases in the area on a single day is 120,000. This is not the whole picture. For every case of kwashiorkor there are two cases of marasmus, three to five cases of vitamin deficiency, about five cases with a low serum albumen, and as many with a low haemoglobin.

In a study made at Coonoor by Gopalan¹ and his colleagues, it was found that there was no difference in the average birth weight of 34 children who had developed kwashiorkor and other children who had not developed the disease.

JELLIFFE : Dr. Rao has indicated that in the first year of life the incidence of kwashiorkor in South India is much less than it is in the second year. Two years ago in South Trinidad we found that in the East Indians, as they are called there, who are people originally from Bihar in India, the incidence of kwashiorkor in the first year, not the second, was 86 per cent. The falling-off of breast feeding was one of the factors responsible.

Anaemia

Amongst other medical conditions of importance in the area is anaemia, of which a significant proportion is macrocytic. There is also anaemia due to iron deficiency, although the intake, according to our measurements, appears to be high. The factors responsible may be excess of phosphate or phytate in the food, with a low calcium intake, and possibly protein deficiency. Hookworm

¹Varkki *et al.*, vide supra.

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does not seem to play an important role. Malaria is no longer a problem in most of the area, and only in one hilly district, where malaria was highly endemic in the past, was a spleen rate of 1.5 per cent found. The incidence of the anaemia, by which is meant a haemoglobin level of not more than 10 g./100 ml. blood, was not the same in all groups. In pregnant women it was about 42 per cent, and in women of child-bearing age who were not pregnant, and children below the age of 15 years, about 20 per cent; it was about 7 per cent in men.

The Social and Economic Background

The villages in which these people live are clusters of houses surrounded by stretches of cultivable and uncultivable land. The houses are of two types, one sturdily built of brick and tile, and the other of mud and wattle, with a thatched or corrugated iron roof. The brick-built houses are larger. In most of the villages there are no latrines and the fields are used instead. There is no system of drainage. Water is usually obtained from wells near the houses. Some attempt is made to keep the part in front of the house clean, but the cowshed adjacent to the house is often a source of contamination.

Everybody in the family works. The men go out early in the morning to the fields, but the women stay at home until about 10 o'clock, when they have finished the morning cooking; then they also go and work in the fields, either in the family's fields, or in someone else's, where they can earn a small wage. The boys between 7 and 14 years of age are usually put in charge of the cattle. Only the old women and the young girls remain at home. The girls' work is to take care of the younger children. The agricultural work occupies the family completely for about six months in the year; in the other six months attempts may be made to find other work, but the pattern remains much the same. Only about 30 per cent of the children of school age actually go to school.

The landlords, the actual owners of land, are the only people who produce enough food to sustain themselves throughout the year. Land is not owned by everyone, but only by about 60 per

cent of the families, and half the holdings are less than 5 acres in extent. Of the landless families, about 20 per cent earned 100 rupees (20 U.S. dollars) a month, or more; the other 80 per cent earned less. In calculating these incomes the value of barter transactions has been taken into account. Cash income is obtained for work of various kinds, and by selling part of the harvest, either because the money is urgently needed for necessities, or because of the lack of storage facilities, either individual or collective. Later in the year, of course, the same foods may have to be bought at enhanced prices.

Little use is made of agricultural credit. The tenant cannot be sure of his tenancy, and the system provides that a fraction of the produce goes to the landlord. Attempts are being made to improve the conditions of the villagers through community development blocks that distribute good seed free, and advise on the protection and improvement of crops.

Although we had our observers living in the villages, it was difficult to be certain about expenditure because the people were illiterate, and unable to say how much they had spent; there was also the complication of the barter system. Expenditure on food varied with the income. If that was as high as 150 or 200 rupees a month, only 50 to 60 per cent was spent on food, but if the income was low it went up to 90 per cent. There was little difference between rural and urban areas. In the villages more money was spent on maintenance of houses, land and cattle, and in the urban parts more on medical aid and education. In the villages, people who are ill either visit a quack who may be paid in kind, or go to the local dispensary, which is free. In the towns they go to practitioners who have to be paid. Despite the shortage of money for food, six to eight per cent of the income was spent on smoking, chewing, drinking and other small pleasures. Although so great a proportion of the cash income is spent on food, the possibility of making good food available at low prices has not received the attention it deserves. Any unusual expenditure is likely to send the family deep into debt.

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Dietary Background

Cattle are kept for agricultural purposes but the number is often very much greater than necessary. Everywhere there is an immense deficiency of protective foods such as vegetables, meat and milk. In two villages that were investigated, there were 2038 persons and 137 head of cattle of which 37 were actually producing milk. The total was 200 lb. of milk daily and a good part found its way to the towns. In villages remote from towns, milk may be used locally. The fishermen's children suffered from kwashiorkor because fish is a cash crop and much of it is sold : in some coastal districts the amount of fish caught is less than it might be because transport difficulties limit the market. The greatest difficulty is not the absence of roads, as it is in some places : for the most part, the road system is satisfactory. Meat is occasionally available in the villages, for instance, if a goat is killed in the festive season, but usually meat is brought from the town for sale to the villages.

In the two villages everybody used rice, wheat or millet. About half the people had vegetables either daily or on alternate days, and the other half had them less frequently. Two-thirds of the people never used any milk at all, and the remaining one-third used it mostly in tea. One third of the people used pulses every day or on alternate days. The main source of protein in the diet was the cereal part of it, and the contribution of pulses, meat and milk, that should provide a large amount, was very small.

Usually, parboiled rice was unpopular in the region, and millet was made into flour. Where rice is not parboiled, about seven per cent of its value is lost, and where millet is ground six per cent of the total grain is not used for human consumption. It seems that improvement in food processing might lead to considerable savings.

Beliefs and Attitudes

Everyone had beliefs and attitudes related to food, but there was no unanimity of opinion. There are beliefs that foods are hot or cold, or light or heavy, but the classifications seem to be without any systematic basis. There are other beliefs regarding food and

disease. Nearly all diseases are thought to be related to the consumption of some kind of food, and some foods are thought to be dangerous when a particular disease manifests itself. There is no concept of deficiency disease, but foods are graded by their prestige values. Poor people who acquire a little money may begin to use sugar instead of gur, and rice instead of millet, because these foods are eaten by the better-off; and other people do not eat certain vegetables because they are thought to be the foods of the lower classes.

Some foods are thought to be good or bad for all people, but there is a belief that certain individuals cannot eat particular foods. If a child develops any kind of upset at the time when a supplementary food is being started, the illness is attributed to that food, which is in future avoided. The onset of kwashiorkor is often related in this way to the introduction of new items of food into the diet.

Only about 15 per cent of the people object to flesh foods on religious grounds, and most people will eat them if they can get them. Religious and sentimental restrictions on the eating of food are not very significant, as people objecting to one item in a group of food such as flesh foods, will take an alternative of equal nutritional value.

The most widespread illnesses of infancy are gastro-intestinal, and soon after birth the children are branded on the abdomen to improve the gastro-intestinal system.

It is perhaps not easy to understand why a mother is willing to burn her child's abdomen with a needle in four or five places, but unwilling to take the child to a clinic for inoculation.

Purging is very common, and in some districts 80 per cent of the children are purged on alternate days, or twice a week, from birth to the age of 18 months. Castor oil is the purgative most commonly used. The purging leads to chronic gastro-enteritis and may affect the dietary intake.

Breast feeding is continued for up to three years in the poorer groups, but for a shorter period in the higher-income groups. It is widely believed that the best time to start supplementary foods is when they can be picked up by the child; that is, at about

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18 months. Between the ages of 6 months and 18 months, the food intake, although it is breast milk, must be very inadequate.

Possible Means of Improvement

It is obvious that much benefit could result from increased food production and improvement in the economic status of the people, but much could also be achieved, within the limitations of the existing resources, by education. The beliefs and attitudes towards foods, and the false system of prestige values, might be changed; the constant purging might be modified. Harmful restriction of diet during illness might be lessened, and some idea might be inculcated of the special needs of vulnerable groups. Hygiene might be improved, wrong notions of diseases might be corrected and some way might be found to reduce the reliance on quack doctors. The expenditure of money on food could certainly be adjusted to advantage. The scope for improvement is evidently large.

C. MALNUTRITION IN CENTRAL AMERICA¹

An important feature of Guatemala is the presence of a large population of Mayan Indians and a Ladino population with somewhat different characteristics. The Indians live in their own rural communities and speak a Mayan dialect, and follow an Indian pattern of living. They depend on maize to such an extent that it may supply 80 per cent of their total calories and 70 per cent of their total protein. The whole society is centred around the cultivation of maize. The Ladinos are either people of mixed Indian-European origin or Indians who have abandoned the way of living of the Indian. They dwell largely in the cities.

The Prevalence of Malnutrition

Both populations have a considerable amount of kwashiorkor. Every year about 170 in every 1,000 children in the age group from one to five years die. A high mortality rate in this age group is sometimes regarded as presumptive evidence of a great deal of

¹The discussion was opened by Dr. Nevin S. Scrimshaw.

malnutrition but dysenteries and parasitic diseases are listed as the major causes of death in official returns. To determine the amount of mortality that was really due to kwashiorkor we examined four towns. One was a fair-sized Ladino town, another a fairly prosperous Indian village, another a poor Indian village and the last the Indian suburb of a larger town. All four had an average mortality exactly the same as that of the country as a whole. By house-to-house visiting we determined that in the last two years, two-fifths of the children who had died had had oedema, skin lesions and hair changes—the full picture of kwashiorkor. Of the rest, about half had died of acute diarrhoea, many of them within 24 to 48 hours of the onset, and the other half had died largely from complications of common infectious diseases.

The Importance of Intercurrent Diseases

Well-nourished children do not die so quickly from acute diarrhoea, and not many of them die from such diseases as whooping cough, chickenpox and measles, and it seemed to us that the high mortality was due to a combination of malnutrition and infection.

PLATT : Do you not believe that the diarrhoea is evidence merely of malnutrition?

SCRIMSHAW : No. We believe that relatively trivial infections in a poorly nourished child will produce diarrhoea and that the diarrhoea may accentuate the malnutrition to the point that the malnutrition perpetuates the diarrhoea. There is the diarrhoea of an infection which precipitates malnutrition and diarrhoea which results from the malnutrition.

ZUBIRÁN : Surely we all agree that malnutrition can produce diarrhoea without the participation of infectious factors. We have established, by studies of function and by intestinal biopsies, that malnutrition is able to produce the mal-absorption syndrome.¹

¹Zubirán, S. (1960). Nutritional aspects of gastro-intestinal disease. *Amer. J. dig. Dis.*, Vol. 6, p. 336.

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CRAVIOTO : Most of our cases of malnutrition start with infectious diarrhoea. If only one or two cultures are made pathogenic organisms are found in the stools of only 27 per cent of the cases, but if the number of cultures is raised to 7 to 10, the percentage is increased to about 42.

Moreover, we have confirmed that in one village an epidemic of measles was definitely followed by a rise of deaths from kwashiorkor, and I know that other workers have made similar observations.

JELLIFFE : There is need for the exact definition of what is meant by the term diarrhoea. In this age group, diarrhoea may mean an infective diarrhoea occurring more easily in a poorly nourished child, or a diarrhoea due to changes in the intestinal tract, and in the production of enzymes, caused by malnutrition.

Typical Case Histories

Most of the histories fall into a few well-defined types. A child is weaned at about one year and given a diet of the thin maize gruel known as *atole* with perhaps some bananas and beans, but no meat or milk. He has several episodes of diarrhoea and finally begins to develop oedema and pigmentation of his skin. His appetite fails and if he cannot be treated, he dies of kwashiorkor.

Another child, also weaned at about one year, is having his diet supplemented with dried skimmed milk, provided by a Maternity and Child Health Centre, when he passes some roundworms. The mother is afraid that the milk will make the worms rise and choke the child; she withdraws the milk and gives purgatives to get rid of the worms. About this time the child has an episode of diarrhoea or an apparently trivial infection. He develops kwashiorkor and, unless he is admitted to hospital, he dies. Another very tragic type is a child who is not thriving and is taken to a clinic where the nurse or physician in charge says that the child must have milk. The mother, protesting that she cannot afford it, buys a tin of milk and uses it in a very dilute form. The malnutrition is not arrested, and the child develops kwashiorkor and dies, usually with an intercurrent infection.

Another child may be doing fairly well, although he is not growing satisfactorily, until he develops measles and with that, anorexia. His food is reduced even further and he never recovers from the anorexia. A few weeks later he develops oedema and then the complete picture of kwashiorkor.

There is also the type of case in which something happens to the mother, and a relative, or other person in the village, tries to raise the child. Artificial feeding fails either because the milk foods are not prepared under sanitary conditions, or because nothing is given but a cereal gruel.

These are the common patterns amongst the Indian families. Amongst the Ladinos one very common pattern is for the father to abandon the mother after the birth of the child and for the mother, who has to go out to work, to leave the child in the care of someone who, through ignorance or lack of affection, does not feed him properly. Frequently, infections are superimposed and kwashiorkor develops. A variant occurs where the family money is spent on alcohol by the father and the mother can afford only cereal gruels and sugar water. Sometimes, a child will develop diarrhoea, and is taken to a local medical practitioner or a municipal clinic and a liquid diet is prescribed. The mother stops giving solid food, the diarrhoea persists, the liquid food is kept on and malnutrition is produced that itself perpetuates the diarrhoea.

In one instance, the child was breast-fed for a long time. Every attempt to introduce solid food failed and the child reached the age of about 15 months, still refusing any food but the mother's milk. He was holding his own until he developed diarrhoea and a severe upper respiratory infection, and was then brought for treatment. The common denominator in all cases is food that is poor in quantity and quality, but in addition there is nearly always some physical stress.

S A I : Alcoholism in the father has been mentioned. A danger that may be even more important is the soft drink. I saw a pregnant woman in Guatemala who had become malnourished because her diet had consisted of soft drinks and tortillas. The

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same may happen in children and we are beginning to see it in West Africa.

S C R I M S H A W : We have had cases in which the mother has exchanged eggs for soft drinks, and the baby has developed kwashiorkor.

In the Indian community in particular, kwashiorkor arises in children as the result of the mother doing things that she believes to be good for the child. Where she gives purgatives, takes away solid food or milk, or follows the advice of the local witch doctor, she is trying to do the best for her child, because she loves the child. She does what she can, but it is often the wrong thing.

P L A T T : In the Gambia the nearest approach to the kwashiorkor type of malnutrition occurs in a tribe that, fairly early on in the child's life, begins to add fat foods of various kinds to the diet.

I have a community of pigs in which infections are not complicating factors, and we have been able to produce malnutrition of the marasmic and kwashiorkor types by feeding a low protein diet in the one case, and in the other by forced feeding with extra calories in the form of a sugary mixture. In Guatemala, it may be the extra carbohydrate that the mothers give, in their attempts to do something for the children who are not thriving, that precipitates the acute fulminating condition. It is interesting, by the way, that there is a distinct element of kwashiorkor in the old descriptions of rickets in England. Some of them mentioned the fatty liver, and also attributed rickets, in part, to a low-protein, high-carbohydrate diet.

The Epidemiological Approach

The aetiology of kwashiorkor is a complex of many factors that can conveniently be grouped under the classical headings of agent, host and environment. The agent is the inadequacy of protein, either relative to calories or because of a relative increase in the requirement of protein. Cereal gruels given to children in Guatemala nearly always have sugar added, and are predominantly sources of carbohydrate with very little protein. I think there is

fairly general agreement amongst workers on kwashiorkor that the disease is precipitated by the disproportion between calories and protein in the diet. The host factors include the relatively high requirement of the young child for protein in proportion to body weight, and adverse effects on absorption, or on appetite, due to related medical or psychological factors.

The environmental factors are of particular interest. They include ignorance of the mother, failure of lactation, the need of the mother to work, the abandonment of the family by the father, or simple poverty. They also include poor advice given by physicians, native healers or friends. Another group of environmental factors is related to disease. Acute infections can act as precipitating factors of kwashiorkor by a number of mechanisms. For instance, a child who becomes ill loses his appetite; he may even develop a real intolerance. When we have tried very carefully to maintain the intake of children who have an infectious illness, the children have vomited. Another effect of infection is to bring about a change in the foods given by the mother, the protein-containing foods often being taken away. Finally there is the effect of the infection on nitrogen balance, with less retention of nitrogen and increased excretion of nitrogen in the urine. Intestinal parasites may also play some part, but their importance is probably overrated.

KLINEBERG : I have read of psychological changes that accompany kwashiorkor. Can you say when they will arise and when they will not ?

SCRIMSHAW : The psychological changes, which include anorexia, irritability and apathy, accompany the more severe states of protein deficiency. They are reversed quickly when the child recovers, and the loss of apathy is a good index of recovery.

PLATT : Similar changes are found in pigs on a low-protein high-carbohydrate diet and we now have histological evidence of permanent damage after recovery. Many deaths occur in the acute fulminating condition and are probably instances of what we call an essential nervous system death.

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DEAN : In 40 per cent of our severe cases of kwashiorkor there have been changes in the electro-encephalogram, but we have been unable to find neurological changes at autopsy.

Prevention and Cure

When we were asked by physicians and nurses how to treat, with locally available resources, children suffering from incipient kwashiorkor, we realized that we did not know. It was not enough to recommend that the children be given more beans or more of the adult diet, because we knew that even an optimum combination of maize and beans would not cure acute malnutrition. It was also useless to recommend that the children be given milk because the families were too poor to afford it. We had also to contend with problems of milk supply, and of increased price, if the demand rose, and the problem of the belief that when a child develops diarrhoea or other illness he should not be given milk. A very low cost protein-rich food was needed and research was begun that has led to the development of our vegetable mixture, Incaparina. (See page 103).

D. MALNUTRITION IN MEXICO¹

The Tlaltizapan Investigation

This investigation, which is under the leadership of Dr. Federico Gómez, is the study of a typical Mexican community by a group consisting of doctors and nurses, psychologists and nutritionists, with advice from an anthropologist.

The group lives in a village called Tlaltizapan in the central part of the Mexican Republic in the State of Morelos. The village can be considered representative, in size and demographic composition, of about 90,000 similar villages in Mexico. It is also, to my own knowledge, not unlike many communities in Jamaica, Central America, Eastern Nigeria and many other small places in the technically under-developed countries.

The group is working on the hypothesis that the distribution of available food between members of the family is determined by

¹The discussion was opened by Dr. J. Cravioto.

the cultural pattern, and that food habits are preserved in the old members of the family and perpetuated in the new through attitudes to and concepts of health and disease, and through the transmission of traditional ideas regarding food values and the foods necessary and suitable for people of different ages.

The study is on a family basis. The mothers are being observed before and during their pregnancies, and the children are followed from birth. It has been possible to show that although height and weight are below the standard for Western Europe and the USA, the rate of growth is the same as it is in those countries during the first three to four months of life while breast feeding is adequate. Afterwards the rate progressively diminishes, the greatest difference from the standard of the economically developed countries being reached between 18 and 26 months of age. After this period the rate increases but never equals that of children in well-fed countries. The pattern of growth is well demonstrated when height and weight are plotted on a Wetzell grid.

If, during the critical period of growth, the child is attacked by any of the infections—very frequent because sanitary conditions are so poor—severe protein malnutrition is likely to occur and to become chronic. It is interesting that in our village, as in many other parts of the world, infectious diarrhoea and measles are the main 'agents' that produce the acute picture of this disease.

As in Uganda, the state of development at birth is considerably more advanced than in newborns in the USA, and it has been found, again as in Uganda, that during the episodes of malnutrition there are large deficits in behaviour, as measured by the Gesell technique. Quotients down to 20 per cent of the normal for the chronological age are quite common.

There is no doubt that malnutrition is an important cause of death in the group one to four years old. The death rate in the group is high when compared to the death rate of the first year—a finding that Waterlow believes is in itself a suggestion of a severe state of malnutrition in a community.¹ An important point is

¹Wills, V. G., and Waterlow, J. C. (1958) The death-rate in the age-group one to four years as an index of malnutrition. *J. trop. Ped.*, Vol. 3, p. 167.

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that many of the deaths are due not to malnutrition *per se* but to electrolyte disturbances which may be due partly to the malnutrition and partly to the infection.

Food Intake

Measurements of food intake are being made, and data on many aspects of family life are being collected. It has been found that towards the age of four to six months the mother's milk becomes insufficient to satisfy the child, dropping in amount to below .500 ml. (18 oz.) daily. The protein content does not change appreciably. In not less than 50 per cent of the children no new food is introduced before the first birthday, when weaning may take place suddenly. The child is deprived of his mother's milk, and the foods he is allowed from his parents' diet do not compensate for the loss.

A series of infectious episodes starts at the time of weaning. In Tlaltizapan, those of infectious diarrhoea increase gradually in severity and in duration. During each episode, the food intake is reduced to a minimum, but is gradually increased during recovery—that is, between one bout and the next. It can be said that when the child is three years old he has been starved or semi-starved for a fourth or fifth of his lifetime.

The children in Tlaltizapan are not given all the items of the family diet, a number of foods being forbidden, some of them always, and others only when certain diseases are present. The food consumption could be summarized by saying that rich or poor, in health or disease, the adult receives a better diet than that he allows his children. The young children fare worst. In 60 families, the average intake of animal protein, expressed as a percentage of the National Research Council's requirements for age, was 42 for children one to three years old, and 67 for those 10 to 12 years old.

Nutritional Status

Since malnutrition is such a complicated problem, we have tried to classify the several factors which determine nutritional status. The basis for the classification is that nutritional status is

due, in the last analysis, to the utilization of nutrients at tissue level, but that many processes, all of them subject to modification, intervene between ingestion and cellular utilization. Moreover, production, transport and storage of food are affected by the nutritional status of the individual because of the relationship between nutrition and work output.

In the factors determining the utilization of nutrients a division has been made between the physiological conditions (age, sex, physical activity, lactation and pregnancy) which determine the nutritional requirements, and all those pathological conditions prevalent in the area, such as disorders of the gastro-intestinal tract, which cause modifications of the requirements by interference with digestion, absorption or excretion.

The factors that determine the amount and quality of the food consumed have also been divided into two groups. The first is concerned with the purchasing power of the family, and the second covers those factors directly related to the acceptance or refusal of foodstuffs for cultural or psychological reasons (including traditional ways of feeding infants, food taboos and prejudices, and the place of food in the scale of values) and concepts, knowledge and practices directly bearing on the sanitary handling of foodstuffs. Attempts are being made to establish quantitatively the importance of factors such as sanitation, literacy and schooling in relation to nutritional status. For example, it has been found that in our village there is a direct relationship between the child's weight for age and the degree of literacy and schooling of the father.

Food Habits

It is pertinent to emphasize that we have tried to discover not only the food habits but also the reasons or rationalizations behind the habits. For example, we have found that cow's milk is not given to small children because the mother or grandmother 'has seen' that it caused diarrhoea which disappeared or at least improved when milk was withheld. The mothers have therefore classified milk as 'harmful' for children, because the community does not yet realize that bacterial contamination is the harmful

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factor. The village has made up a list of foodstuffs said to be harmful and which must be omitted from the diet in different physiological or pathological conditions, such as lactation, pregnancy, diarrhoea, fever or cough, and the list is passed on from mother to daughter as part of the knowledge and practice of 'nutrition education'.

Popular Concepts of the Causes of Disease

It is already known that the ideas which combine to produce the 'food habits' of a community are an integral part of the prevailing ideology concerning health and disease, life and death. It is also accepted that magic and science both stem from the same root—the universal desire to explain the apparently inexplicable—and that the transition from a magical to a scientific explanation of everyday phenomena has been a gradual process throughout the centuries.

It was thought that a systematic understanding of the concepts of health and disease of the people in our experimental village would be useful in any future attempt to prevent or eradicate the prevalent diseases, including those of nutritional origin.

An investigation was therefore carried out into the popular concepts of the nature of the five communicable diseases which form the chief causes of death among Mexican children. The concepts discovered were then classified according to the causes of disease prevailing at different periods of history.

The results showed that the majority of the causes ascribed to the five diseases corresponded to those held in Europe in the 17th and 18th centuries, though for some of them more modern ideas predominated. Usually, of course there was a mixture of ideas derived from different periods.

It is unlikely that these ideas, and particularly the magical beliefs, will be altered by argument or persuasion, and other approaches must be sought. Perhaps visual proof of the superior value of a new cure, or a new type of seed, may be the first step towards the acceptance of scientific ideas.

Malnutrition can only be prevented when food habits are changed. By food habits we mean not only how food is consumed,

but how it is produced, and in what amount, when it is kept for the family, and when it is sold. Improvement must take account of all the available resources, and must include the better utilization by the farmer of the land that he owns. In the meantime we have a fish-meal that can be used to enrich diets (see p. 104). Mexico has a long shoreline, east and west, and plenty of fish that are not used at present; the consumption of fish is not traditional, especially in the central plateau where malnutrition is most prevalent. An FAO expert showed that as the economic position of the family improved, the consumption of meat increased very rapidly, but that of fish more slowly. So far only the acceptability of the fish-meal has been tested and we have been trying to follow the way in which the foods containing it are distributed in the family, to know if it is given to the child who is most in need of it. The use of the food has also enabled us to find out if some people in the village are better than others as spreaders of nutritional improvement, and whether some people may be regarded as immune from nutritional propaganda.

Other Work in Mexico¹

The National Institute of Nutrition, under the direction of Dr. Salvador Zubirán, has been involved during the last three years in the task of investigating the nutritional problems of the Republic. Up to the present, the Institute has made 16 surveys in different parts of the country. In each, dietetic, economic and medical data have been collected: recently socio-cultural factors have also been included. In addition, the Institute has established two experimental programmes, one in a rural community in the south-east part of the country and the other in a suburb of Mexico City, for the purpose of studying methods of meeting the most important nutritional problems.

These investigations are the basis of the whole work of the Institute. They will guide the planning of research and the development of co-operation with other government agencies in applied programmes. They will also serve for the training of personnel. We hope that by the end of the year publication of our

¹Postscript submitted by Dr. S. Zubirán.

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results will begin, either in the monthly Bulletin of the Pan American Health Organization, or in *Salud Pública de México*.

E. MALNUTRITION IN INDONESIA¹

The Malnourished Mother

The situation in regard to children that was described as common in Africa is almost unbelievable for my country, Indonesia. I should like, however, to mention malnutrition in a group other than the small children: the lactating mothers who are usually considered especially vulnerable to malnutrition. In our culture, a woman should not be greedy and she should be slim; in our mythological plays the most favoured women are slim, and the other women are obese. The mother, even when she is the nursing mother, takes less food than her requirements. Women and adolescent girls are not allowed to eat watery fruit such as melon or to drink much water, and are recommended to fast although fasting is forbidden to nursing mothers.

The restrictions have been found to cause deficiency syndromes. Nutritional oedema is more common in nursing mothers than in other groups, and its amount may possibly be of use as an early indicator of a developing food shortage. The woman with many children looks older than her age. She may be anaemic, she may lose her hair, and her skin may be unhealthy. These things can be expected if we consider that her life consists of an uninterrupted chain of pregnancies, deliveries and lactation. In an investigation of families who were not too poor we found that the average mother had an age of 30 years, and the average number of her deliveries was 6.4. Of the children, 40 per cent died before the age of five years.

Breast feeding is usually prolonged for two years, and in eight women in the second year of lactation we found a daily milk secretion of 360 ml., an amount that is not negligible in a country where animal food is expensive. Too often, mothers are advised to stop breast feeding without any consideration being given to whether or not good food is available for the small child. Such

¹Contributed by Dr. Poorwo.

advice is usually given by educators who are not sociologically minded.

The mother is the key person in the everyday supply and distribution of food, and if she is in good health can give more care to the children and to the whole family. Pregnant mothers are served by specialists, but the nursing mother, and the mother of young children, has no one to help her. At medical centres, a regular hour should be reserved for attempts to help mothers in the solution of their problems. If the child seems to be short of breast milk, attention should be directed to the mother. Most of the many problems of mothers are related to the health of the family, the supply of food on a limited budget, and the spacing of births. Family planning could be of the greatest importance in improving child care, and in the prevention of kwashiorkor.

4

*Culture Change in Relation to Nutrition*¹

History of Co-operation Between Disciplines

THE SECOND World War created a variety of problems related to food and nutrition, and directed attention to the fact that, for most people, the nutritional value of the foods they chose to eat was neither its most important aspect nor the reason for their choice.

By this time the science of nutrition had attained a considerable degree of precision, but did not include any systematic study of relevant human behaviour. Food habits were regarded as 'good' or 'bad' depending on their contribution to nutritional well-being, and it was presumed that people would be ready to change their 'bad' habits, if and when they were told how to do so.

Experience, however, proved otherwise. In Britain, a nourishing soup prepared for use after air-raids was not acceptable until its colour had been changed from white to brown. In the USA it was found that people did not eat 'protein', they ate a 'main dish', oval or round, and placed in front of father! Spanish rice or macaroni were acceptable substitutes for the meat that this dish usually contained, but not milk. Factory workers, whose workshifts necessitated their eating two 'lunches' and one dinner, were found to be less well nourished than those who ate three meals, one of

¹The discussion was opened by Dr. Margaret Mead.

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which could be socially defined as breakfast, with a different nutritional content.

The obvious need for assistance from the human sciences in similar problems was met, in the USA, by the establishment in 1941 of the Committee on Food Habits of the National Research Council, and co-operation between the nutritional and social scientists began.¹ The nutritionists wanted to learn from the anthropologists and psychologists 'How do you change food habits?', 'What causes resistance to change for the better?', 'Which foodstuffs are "emotionally charged"?'—and were often disappointed at the reluctance of the social scientists to answer these isolated questions.

The first task of the anthropologists was, therefore, to explain their inclusive approach to the study of any cultural pattern—an approach which views any particular food habit as an inseparable part of the total pattern of living. Moreover, their previous experience of the disruptive effects of sudden change influenced them to insist that any change in nutritional patterns should be introduced slowly, and be built on to a familiar practice.

Improvements in diet were achieved by reinforcing common foodstuffs, or by the introduction of an additional nutrient in a familiar form, or, latterly, by the provision of a supplement to be blended with the family food in whatever form seemed most desirable to the user.

During the post-war years, however, it became clear that the disruptive effects of rapid change had occurred when the change had been imposed from without. In communities where the people themselves wanted to change, alterations in food habits evidently could and were being made with less disorganization.

Present-day Approach

The question to be asked today, therefore, is not 'How do you

¹The results of the wartime work in the USA, with reference to available UK experience, were published in two Bulletins of the Committee on Food Habits of the National Research Council: *The problem of changing food habits*, Bulletin No. 108 (1943) and *Manual for the study of food habits*, Bulletin No. 111 (1945); in *Food and the family*, by M. Mead, Manhattan Publishing Co., New York (1949) and in *Cultural patterns and technical change*, Ed. M. Mead, UNESCO (1953) reprinted as a Mentor Book (1955).

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change food habits?' but 'How do food habits change?' We want to know also how the habits are established in each generation, how the child learns what to eat and what to avoid, and how much of certain foods should be eaten, how the learning of food habits is sustained by other aspects of community life, where the flexible points are, whether the people accept scientific knowledge at all, and if so, in what form, how a new pattern can be developed that will be nutritionally sound, strong enough to replace elements now nutritionally useless, and flexible enough to change when necessary, and what can be learned from past experience, that will guide us in our efforts to improve food habits now.

Lessons from the Past

Experience has shown that in self-sufficient peasant-type cultures, where the diet has been adequate for survival, though often extremely meagre, planting and harvest, storage and consumption are closely interwoven with religious ceremonials, the proportions of sex, age and rank among the population and so on. A single change may alter the whole pattern, as, for example, when the men who do the fishing go away to work, or the children who do light cultivation, or food-gathering, go to school.

Survival in such societies has depended upon successfully transmitting the whole culture pattern to each generation. Some aspect which is apparently only remotely related to nutrition may actually be crucial to the protection of the people involved.

As soon as primitive peoples become part of a larger political system, their culture is no longer self-contained, but is subject to decisions and events originating far away. Where the dietary patterns are externally controlled by systems of land tenure, trade patterns, taxation, labour markets, restrictive legislation or discriminatory customs, malnutrition may stem not so much from the overall conservatism of an isolated community, as from the stubborn clinging to details of procedure, such as methods of planting and harvesting, or the use of particular foods and no others, or from religious practices. The traditional diet of dried fish, rice and lard of the plantation workers in Puerto Rico was determined in part by the commercial interests of the New England companies

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that controlled the sugar plantations. Attempts to modify this diet—to introduce fresh fish, fresh vegetables, different proteins and carbohydrates—met with extraordinary resistance. In New York City, however, where living conditions were entirely different, the immigrant Puerto Ricans proved very susceptible to nutrition education.

Most of the experience of nutritionists and health educators has been with groups subject to external control. Because the culture of such groups is less well-balanced internally, and less complete, changes are often introduced fairly easily and appear for a time to be successful, but the absence of a self-sufficient and integrated culture may cause the gains to be very short-lived. It is possible to teach women that milk in bottles or dried milk in tins is superior food for their children, but this advance may be swept away by a rumour that the milk is poisoned, or will produce sterility, or has been introduced for political motives. Inflexibilities, usually expressed as a refusal to take advantage of good advice, of school meals, and of suggestions for utilizing substitutes and alternatives, have puzzled and discouraged the educators in many parts of the world, and emphasized the need for increased co-operation with the social scientist (R. C. Burgess).

Because of the apparently irrational rigidity of various types of inadequate diets, it seemed wise in the 1940's to stress the importance of variety and the acceptance of new foods, and to encourage methods which would facilitate the acceptance. Experiments demonstrated the greater acceptability of a new, unfamiliar food if it was presented in a new, unfamiliar container. Research showed the ill-effects of closely associating food with moral training or ideas of identity and status. Experiments were also carried out to uncover the deep cultural biases that would aid or hinder the introduction of new foods.

Because most diets of the under-privileged, even in wealthier industrialized countries, were found to be deficient in calorie value as well as in many specific nutrients, efforts were still directed towards the consumption of more of the 'right' foods and to the provision of supplementary foods to school children, and to expectant and nursing mothers.

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Spontaneous Change

Spontaneous changes in food habits do occur, and are often based on an individual's desire for foods with more social prestige : white bread instead of *tortillas*, coffee instead of *atole*, tea instead of buttermilk. Such changes are frequently deleterious (Kelly), and sometimes disastrous, as in the change from breast to bottle feeding that is spreading rapidly in tropical countries today (Jelliffe).

Experience with immigrants to the USA has shown, however, that given time and increasing economic security, the initial deterioration in diet due to the buying of prestige foods rights itself in the second or third generation. Where the prestige foods are nutritionally desirable the result is ultimately better than the original traditional diet. It would appear that over-emphasis on the superiority of the traditional diet, in an effort to improve nutritional standards, is generally useless. It is unlikely that people will be persuaded to go back to their traditional diet when other people, living in a more modern way, are eating something else.

Successful Spontaneous Change

It has been found that spontaneous change in a community is successful only under certain conditions. The people themselves must want to change; all the people (in the sense of all the groups that are usually in disagreement—grandparents and children, members of different class or religious groups or of the government) must want to change; the change must be accomplished rapidly, and other necessary changes made simultaneously. If, for example, a change in food habits involves new methods of cooking, it is more easily achieved if new kinds of pots and a new kind of kitchen are also introduced at the same time. Each change supports the other.

If there is a change from a barter to a cash economy, retail stores and a bank must also be set up. Unless there is a bank, the wage earner is defeated by the other members of his family, who continue the traditional practice of borrowing or pooling family

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resources, but without the old controls. Where this has happened the lamentable pattern of buying just enough for one meal has developed, as part of the wage earner's effort to protect himself from the unforeseen results of partial change.

Experience has shown that a change in the way of life is welcome when it presents an obvious, clearly demonstrated improvement on present methods, for example, the use of a bicycle as a means of getting about, learning to read and write, or easier preparation of food. People are also quick to appreciate improvement in their children's health, even though that may not have been the avowed aim of the initial enterprise (Platt).

The Situation Today

Today, among the majority of the peoples of the world, societies are in a state of rapid change. Old patterns have been disturbed and are being replaced by new patterns which have not been tested and shaped over generations, but are instead quickly established by new conditions of life.

Nearly everywhere there is a desire for change—for a better standard of living and a better chance of survival for the children. The desire, however, is seldom stated directly, or with any recognition of the connection between food and the health of the children, or between undernourishment and ill health (Mead, Kelly, Frenk). The first sign may be the expressed wish for a road or a radio, the first evidence a change in house-building or agriculture, or in children's education (Read¹). But once people have learned, as many have today, that 'other people who live differently have children who do not die' and want their children to live, the foundation is laid for the kind of rapid change the nutritionist wants to see.

Guided Change

Today, some changes are being guided in the light of scientific knowledge but many are not. In the precarious situation of most malnourished countries the health worker's responsibility is to

¹Background Paper No. 8₂(see list on p. 203).

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ensure that guided change from whatever quarter really is improvement and is not change for change's sake (Burton). In the present context, the principal objects of guided change are children suffering from protein-calorie malnutrition.

In some countries, food production is the most urgent prerequisite (Zubirán, Autret, Borlaug), in others, the raising of the economic standards and purchasing power of the people (Autret, Platt) or the adaptation and wider use of local foods (Kelly).

The most difficult problems arise where the people are malnourished and do not appear to want to change the food habits that are contributing to their malnutrition.

KLINEBERG : Where the people do not want to change, is it not part of the function of the nutritional or agricultural expert to stimulate the desire for certain changes?

MEAD : During the second World War, people in many parts of the world became aware that a different way of life was possible. Where this awareness exists, the people do not have to be made to do anything. We know that people will not learn unless they have an adequate motive for learning, but to try to create the motive is one of the extravagant mistakes we made frequently in the past when we attempted to bring about changes in public health, nutrition or paediatrics. There are enough people in the world today who want change, and want it this minute, to occupy every technician, and every economic resource, that is available.

SCRIMSHAW : Some of us are working with populations that are having changes forced upon them whether or not we, or they, want them. In these circumstances, leaving the people alone will make the situation worse. Surely we have an obligation to help them, to see that some of this change will be beneficial, and to ensure that any possible harm will be minimized? Even where the change is desired, some guidance or stimulation of motive seems necessary, so that the satisfaction of 'felt needs' is not disastrous. We cannot stand back and do nothing when a mother's idea of change is to have enough money to buy a soft

drink to feed her baby. We must give the people the knowledge on which they can base good aims.

KELLY : Some guidance with respect to 'felt needs' in nutrition is certainly necessary. A great many people have very little understanding of the relationship between health and food, or diet and infant mortality, or even that they are themselves under-nourished. They have never had a full meal in their lives and do not recognize the need for food.

MEAD : I agree. It is unlikely that 'felt needs' to improve one's food habits will be found anywhere, but 'felt needs' which imply a willingness to change do exist, and can be used. Public health workers have only recently been concerned with 'felt needs'. The imposition on people of forms of behaviour that we believe are sanitary, or nutritious, is a deeply ingrained habit in many workers, not yet fully eradicated. Also, there is a difference between giving knowledge and creating a motive to change. In most parts of the world the motive, and therefore the first requisite for rapid cultural change—something the people themselves want—is there.

HUENEMANN : Is the desire of people to live more fundamental than their desire for their children to live? In public health we have worked on the premise that the desire to live is the strongest motive.

MEAD : The desire that children should live goes with change, with the idea of a better life, a different future. If you do not really believe in the future and have very little hope, then the desire to live oneself may be stronger. This is the concentration camp position, where people fight for food for themselves.

HUENEMANN : The position still exists in many parts of the world.

Motivation towards Change

WILSON : Even in such communities, however, there are usually some motives on which processes of change can be based. In the field of mental health, psychotherapeutic relationships arise from the patient's need for change in some aspect of his personality. This need provides the motive which not only

takes the patient to treatment, but also activates the work he undertakes in that situation. The therapist does not 'instruct' or 'tell' the patient what to do, but provides a setting in which the patient can, through direct experience, be helped to learn about himself, and so begin to change those aspects of his approach and relationship to others which have been painful or unsatisfactory.

The 'felt need', the motivation which initially takes a psychological patient to treatment is usually negative: the need to be rid of symptoms. Later, his 'felt need' is likely to become more sophisticated and to centre on gaining increased satisfaction in life through improved understanding. Later still, he may wish to 'grow'—to develop the full potential of his personality.

Analogous phases of changing motivation and changing 'felt needs' are not unusual in successful community projects. The history of medical missionary work provides examples of this stage-by-stage process. The missionary did not set out primarily to offer medical care, but often enough no other approach was at first possible; the medical care was the only thing the people wanted and could accept. The real purposes of the mission were approached only after a considerable time when, through teaching and the establishment of confidence, the idea of spiritual care became more fully understood.

In the field of nutrition, the question arises—'In what circumstances can professional action (therapeutic or educational, and aimed at some form of change) be justified if the desired change is not recognized as a felt need by the intended recipient?' As there are usually some felt needs through which change processes may be initiated, the question might be framed differently: 'How far is the nutrition worker justified in trying to meet almost any type of felt need expressed by people as a means of moving towards his own therapeutic or educational aims?'

The safeguard against the possibility of 'tricking' or coercion of people by the professional worker lies in his attitude, and in the methods he uses. As long as an indirect approach is initiated

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and accompanied by full and continuing step-by-step discussions with those concerned, at each stage of the work, the danger of 'tricking' or coercion is slight. A 'social contract' becomes established in which both the nutrition worker and those he seeks to help have their responsibilities.

DE ZAYAS : I want to stress the importance of the person or persons who are going to try either to make people want to change, or to change people. We Puerto Ricans are specially able to comment on the changing of food habits because not only have people wanted to change us—in Puerto Rico, in New York or in Chicago—but we have ourselves tried to change our own people, and we have had a lot of experience with different people from various countries coming to work or to study nutrition in our country. I think therefore we have been able to get a good idea of both sides of the picture.

When nutritionists started work in Puerto Rico, they told the people 'It is wrong to eat rice and beans'. 'Nutrition' to the agricultural workers came to mean a plate of tomatoes and a glass of milk—which they disliked intensely! They wanted to have nothing to do with nutritionists or anyone who was going to talk about nutrition. However, as soon as they were told that rice and beans were good foods and were not going to be taken away, that eating these foods was not wrong, and that they only had to add something else, things improved and the farmers came into the nutrition programme. If the attitude of the nutritionist is that 'Their coffee is no good, their beans are no good, they were given rice and they didn't eat it' the whole programme will break down.

AUTRET : Particularly in a population which is malnourished but which has some possibility of improving its own nutritional state, the 'felt needs'—the things the people want to change—and also the changes they will resent, must be discovered. The Community Development movement is really an indirect approach to better welfare : this includes better diet. Through Community Development the people can be brought gradually to accept dietary changes which would have been impossible at first.

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The Anthropologist's Role in Guided Change

While the safety of the individual in isolated self-sufficient societies depends on vigorous adherence to a total dietary pattern, in a changing culture the possibility of nutritional improvement appears to lie in the acceptance of a wider variety of food. Even where people share only a part of a culture they have a wide field of choice and exercise their powers of selection to add new features to the culture without necessarily altering the main structure (Read). In the past the anthropologist would have advised 'Change everything slowly and do not change anything much'. Now he is in the position to give directions for rapid change that are in accord with what the nutritionist wants to achieve. To be more explicit, the anthropologist can help the nutrition worker :

- (a) to see the nutritional pattern in perspective, as part of the total culture, and to identify those elements which can be changed without undue disorganization of the whole,
- (b) to discover the interests and needs of the people themselves and the means whereby these may lead to improvement of the nutritional state (Kelly),
- (c) to identify local foods which are already known and liked, and which, if eaten in greater quantity or more frequently, would be nutritionally remedial (Kelly),
- (d) to introduce new foods in forms that will harmonize with the local dietary style, if possible by enlisting the help of the people themselves in the creation of suitable recipes,
- (e) to recognize those situations where nutritional improvement cannot be achieved without some drastic change in the external conditions, for example, in the newly-established cash economy already described,
- (f) to foresee and avoid, as far as possible, undesired side-effects or consequences of changes in agricultural methods or food habits,
- (g) to recognize, and get rid of, much of the 'cultural baggage' which he unwittingly carries with him in his work, such as an inordinate respect for ungulate milk as

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a food for children, a feeling that one should eat the right food as an act of will, or an inappropriate emphasis on the child as the most important member of the family,

(h) in the training of the indigenous nutrition worker.

The anthropologist can also help in planning any programme intended to improve nutrition (see p. 152). Even at government level, there should be people who know the food habits of the people in great detail—what they like to eat, when and how they cook a particular food, and what they feel about it.

Nutritional knowledge alone is not enough. The introduction of a food that is the wrong colour, or regarded as food for animals or prepared, grown or processed in an unusual way will cause trouble and the people will be reluctant to use it (de Zayas).

Minimum Change

A community involved in change is a living situation, and a new pattern of food habits emerging at any time will still be a cultural pattern. The task of changing food habits is really a problem of culture building, in which nutritionist, agriculturist, economist and anthropologist work together to replace the old nutritional style with a new one. A programme of guided change has more chance of success if it focusses on those minimum changes in the practices of the people which will make a critical difference to nutritional balance (Sai, Burton).

The history of the introduction of the potato as a staple food in England and Ireland shows that it was mainly the social environment it encountered which determined the rate of its acceptance. In Ireland the potato established itself in 50 years, whereas in England 250 years were needed. There were some differences in soil and climate but the main influences governing the rate of acceptance were the political situation, the system of land tenure, the customary cooking methods, the availability of other foods, and fuel. Perhaps the most influential factor determining the speedy adoption of the potato in Ireland was that its use demanded a minimum change in the people's established habits of living (Burton).

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Need for Knowledge at all Levels

All involved in a programme must, therefore, have an up-to-date knowledge of the specific socio-cultural situation, and of the nutritional aspects of the total pattern of national and village life—whether they be medical nutritionists concerned with the child in front of them, economists and agronomists concerned with increasing the supply of cereals in a country, or those concerned with the educational problems of changing people's ideas about food and health. Each kind of worker must have some understanding of the technical problems of his colleagues.

An excellent demonstration in a particular village has no value unless it takes into account the available resources of the whole country. It is useless for the government of any country to plan to introduce a food without a knowledge of how people at various levels will respond, and it is useless to work without clinical knowledge of the specific nutritional consequences of the proposed action. Equally, it is useless to work without some understanding of the psychological mechanisms which make people willing to go hungry rather than to eat food that is strange to them.

The Inverted Pyramid

It might be helpful to think in terms of a model, an inverted pyramid which would include all levels of technical knowledge and skill. At the top, the international level, there would be the demographers with their knowledge of world-wide changes in population and the agricultural needs thus created, and the political scientists¹ concerned with the realities of food production and competition between countries. The national or regional levels would include the clinicians, anthropologists, agriculturalists, educators and professional persuaders (government or commercial), and finally there would be the teams working at the village level. At all levels, knowledge from each of the special fields is needed, though at any given level, one type of knowledge may be more important than another.

¹These would include experts in agronomy, food production planning, marketing and trade (postscript by M. M. Autret).

5

Common Needs and Differences among People as Individuals and as Members of Groups¹

WHILE THERE are a great many culturally determined variables in attitude and behaviour that differ from society to society, there are also certain common human characteristics. In recent years there has been a retreat from the attempt to explain all human behaviour in terms of social and cultural learning, and a renewed recognition of the universality of some human needs and motives (Klineberg).

Similar Problems Everywhere

Problems of modifying nutritional patterns do not occur only in countries now becoming industrialized. In one European country where traditionally the young married couple share the parental home, nutrition education for the young mother is practically impossible. The mother-in-law or grandmother makes all the decisions as to how the members of the family, including the new baby, shall be fed (den Hartog)—a situation familiar to nutrition workers in many countries.

What is a Meal?

Specialists often tend to use a frame of reference that is narrow and therefore potentially inaccurate. To the physiologist, a meal

¹The discussion was opened by Dr. A. T. M. Wilson.

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is a re-filling of the gastric 'hopper', whose existence obviates continuous eating and controls input to the absorptive part of the gastro-intestinal tract. To the psychologist, on the other hand, a meal is a phase or occasion of satisfying, more or less, a variety of needs and drives. Some of these are largely the psychological representation of physiological processes; some are primarily pleasure-seeking and may be developmental in character; others are associated with the reduction or prevention of anxiety and are primarily symbolic, representing something of the psychological 'sharing' found in most types of 'communion'.

To the social psychologist a meal is an institution of the household or group. Its special properties are linked to the number and character of the participants. It affirms the solidarity within the group and within the household. It is an occasion on which the role and status of each member of the household are demonstrated, clarified and maintained. At the inter-personal level it is of particular importance to the group member who is preparing the food.

In terms of disciplines concerned with larger units of society—anthropology and sociology—a meal is one of a category of social institutions in which a variety of common and differentiated values, objectives, and roles receive both practical and symbolic expression and modification.

Food and nutrition, therefore, cannot be considered apart from the individual personality and its social setting; and nutritional patterns or policies have to meet criteria of several different kinds before they are likely to be satisfactory. These criteria can be expressed in terms of the relevant biological and social sciences.

Universal Human Needs

Certain aspects of human personality are important to consider in relation to nutritional policies :

1. Each human being wants to survive; but manifestations of a diminished interest in survival are found in some communities and need further study (Velasco).
2. People want to minimize personal suffering of all kinds; but for present purposes 'suffering' includes the mental pain that

arises from the frustration of familiar needs, and from the loss of any activity or belief with a relatively high significance or emotional investment. The amount of pain arising from loss will depend on the amount of the emotional investment; different degrees of investment in children are found in different societies.

In seeking to minimize suffering or stress by some kind of self-protection, each society and each individual tends to have preferred techniques, adopted sometimes consciously, but more often unwittingly. Once aware of the possibility of their existence, the public health worker should not, as a rule, have much difficulty in recognizing them. Here are some of the more familiar.

(a) Limiting the Basis of Perception

As used by the medical profession, this 'technique' has had far-reaching effects. There has been, in medicine generally, an unexpectedly prolonged preoccupation with pathology. This preoccupation—almost to the exclusion of the personality and social situation of the patient—may have one origin in the emotional stress of professional and clinical work. The family doctor who must face a dying child and its anxious parents suffers the stress caused by the gap between his actual powers, and the omniscience and omnipotence which he would like to possess and which are inevitably desired of him. For the doctor the stress may be reduced to some extent where he perceives not a dying child, but a failing cardio-vascular system.¹

This particular means of relieving stress involves narrowing the frame of reference within which a situation is perceived, and certainly contributes to the difficulty of accepting the personality and social situation of the patient as of central importance in many medical situations. In practical terms, its particular significance for this discussion lies in the effect it is apt to have on workers in preventive medicine, whose training may have begun in a clinical atmosphere of the pathology of illness and recovery, and

¹This type of defence against the inevitable emotional repercussions of work with tragic and painful aspects of human life can certainly be seen in other quite different professions. For example, in military circles, discussions on shelling or bombing are much more frequently conducted in terms of 'targets' than of the 'enemy', far less of 'the people'.

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provided little preparation for future tasks in the field of health education. These tasks are inevitably concerned with the personality and social situation of those whom the educator wishes to help.

(b) Apathy

Apathy is another defensive technique. To some degree it is equivalent to convincing oneself that one does not really want the object in view. It covers the fear of hope, since hopes may be frustrated, and there is a limit to the number of times that people will allow themselves to risk hurt by developing hopes which may not be realized. Apathy is perhaps best thought of as a state of anxiety-driven defensive neutrality about life. In certain circumstances it can be overcome or got round by an outsider seeking to help: if he is to be successful, his approach needs to be based on knowledge of the nature of apathy, and on recognition of the past experience of disappointment, the anger, hostility or bitterness which it usually covers. It is the extent of the latent bitterness behind apathy which may create problems for the social or medical worker seeking the active co-operation of the apathetic individual.

JELLIFFE : Are there not also nutritional, parasitic and even cultural causes of apathy?

WILSON : The state I am describing as apathy is one of chronic angry boredom covering bitterness and anger—not, as is often thought, a mere absence of energy. On provocation, the latent anger—a kind of utter exasperation with failure and the uncertainty of hope—shows through the apathy fairly easily. In dealing with a person in this state, one of the things you must never do is to try to cheer him up with words; he cannot accept help in that form. The most you can do is to offer him an opportunity to check whether or not, in very simple matters, you are trustworthy. From that you can begin to build. If realistic hope is re-born, his lack of energy will vanish.

PLATT : Apathy has been produced in human beings by malnutrition, and in animals an actual change in the neurons has been found.

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WILSON : What has been produced is a physiological state in which the individual does not have any energy, or respond to familiar stimuli. As I define the concept, apathy is primarily a psychological state; and the differentiation between this and the lack of energy you are describing (a clinico-pathological condition) lies in the fact that in apathy, there is a considerable body of repressed disappointment, exasperation and anger arising from past experience, while in your condition there is not. In 'physiological' apathy, the inevitability arises from the present; in 'psychological' apathy it largely arises from the past. However, my kind of apathy and your state of lack of responsiveness are often found together, for obvious reasons.

DEAN : The apathy of the child with kwashiorkor (the child who wants to be left alone to die and who resents angrily any disturbance) is now well recognized as one of the psychological signs of severe kwashiorkor. The linking of anger and apathy seems particularly significant.

PLATT : But these two things go together experimentally : the apathetic subjects also reflect the easy irritability. The accounts of the two main experiments that were done on experimental under-nutrition—Benedict's in the first World War, and Ancel Keys's in the second—give very similar descriptions of the psychological changes that were encountered.

DEAN : The civilian population we studied in Germany, who were in some ways similar to Ancel Keys's experimental subjects, were not angry. Nor were they irritable to anything like the extent that is seen in children with kwashiorkor.

VELASCO : Four different stages in the development of kwashiorkor are generally recognized. The purely psychological aspect, without any biochemical or physiological change, could correspond to the first stage of frustration in the child who is not receiving nourishment, and who is then angry or irritable. At the second stage, with biochemical deficiency, the child incorporates this irritability into his total reaction. Therefore, at the third stage he remains aggressive in spite of physical recuperation. At the fourth stage, in some cases, alterations in a child's personality persist—also in spite of physical

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recuperation. If this happens widely, the apathy we have been speaking of may become one of the cultural characteristics of the general population.

(c) Techniques of Projection: Scape-goating, Evasion and Magical Appeasement

Other ways of attempting to deal with the internal stress of threats to life or to emotional security are to over-estimate external dangers, or to attribute internal threats almost entirely to external influences of various kinds; and, with this, to attempt magically to evade or appease an apparently external threat, or to balance one type of threat against another. The practice of giving 'heating' or 'cooling' foods in particular kinds of clinical conditions may be a form of this kind of balancing technique; similarly, avoiding certain foods may unwittingly be a magical technique for evading what are regarded as threatening influences—not of a nutritional kind.

(d) Techniques of Introjection: 'Identification with an Aggressor'

These techniques are complex and difficult to explain. They are closely related to the projective techniques and also come into play where the environment, either internal or external, is felt to be predominantly hostile or punishing, and threatening to the physical or emotional security of the individual. Tense and painful situations, if they cannot be dealt with in any other way, appear to be more tolerable if the person concerned can act as if they happened with his consent. His underlying attitude might be expressed colloquially as 'If I can't lick it, I'd better join it'.

The purpose of these techniques—they are not conscious affairs—is, in part, to retain at least the remnants of self-respect, or some faint but important illusion of being in control of the environment. They are often of great significance as psychological mechanisms in those who are exposed to extremes of deprivation of food, or of security; and they may lie behind some of the paradoxical responses and apparently incomprehensible phenomena which sometimes arise when food becomes available or security is regained—as, for example, in returned prisoners of war.

To return to the discussion of common human needs :

3. A need for new experience, for personal development, or at least, for change of some kind, is almost certainly universal and can provide a basis for many kinds of health education. The desired change need not be in the external world. It may be confined entirely to a change by 'internal migration', a basic change in the internal attitudes of the individual.

4. There is also a continuing and universal need for what may be called psychological 'maintenance work'—that is, checking up on basic assumptions involved in perception of life. Each day, on waking, people need to go through sets of familiar activities whose purpose is largely to satisfy them that things are, roughly speaking, as they were when they fell asleep. An investigation¹ in which people—blindfold, with ears covered—immersed themselves in baths of lukewarm water to cut down sensory influences, illustrates this need. During the experiments, some of the subjects who were in this way cut off from both social and sensory contact with the external world—that is from the opportunity of checking—began to show signs of hallucinatory experience, a type of phenomenon which goes with the fear of mental illness, with a threatened breakdown of the power of the mind to control.

A similar reaction, on a different time scale, could be seen in people who were subjected to solitary imprisonment during the war. They reported that while they might be afraid of death during the first three or four days, ultimately they all had only one fear, the fear of going mad. Like the experimental subjects in the lukewarm water, they apparently felt cut off from the opportunity of checking and rechecking the basis of their perception of what was going on around them, and began to feel that their internal psychological structure would break down. Many of the activities which take up the working day (for example, morning tea and the regular family meal) contain, in essence, elements of this type of 'maintenance work' on the basic assumptions or working philosophy of life, which each of us needs to make our world comprehensible and tolerable to ourselves. Resistance to change

¹Lilly, J. C. (1956) Mental effects of reduction of ordinary levels of physical stimuli on intact, healthy persons. *Psychiat. Res. Rep.*, Vol. 5, p. 1.

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may, therefore, arise from fear of losing some valued 'checking' activity.

Universal Human Attributes

In addition to the universal needs briefly discussed so far, there are other common human attributes. Each human individual has a metaphysic: that is, he has a basic point of view with respect to what is real and what has effects. He also has a physiology, an integrated set of concepts about how he feels the body works; and he has a psychology, a point of view about why people do the things they do, and what will happen as a result. Allied to his metaphysic, he has a value system and a philosophy which in some way represent his idea of what is good and what is evil, of where these two particular kinds of forces or attributes are located, and how they can be handled.

Universal Human Differences

There are also, of course, differences both between people in the same region and between people in different regions of the world. An obvious difference, which is often ignored in all kinds of agency and professional work, is the variation in intelligence—as that is defined by the psychologist. Some people, however hard they work, are unlikely ever to be able to understand certain problems. The assumption that extra years of school will enable all children to reach the same standard of educational attainment is, therefore, invalid. A range of intelligence, of educational potential, exists within any country and, it appears, is very much the same in all countries. There is, however, a great difference everywhere between educational attainment and educational potential.

A second and very important difference is the extent to which groups of people (cultures and sub-cultures) provide help for someone who must withstand loss, frustration or pain. There are also great differences in the extent of individual or group efforts made to overcome a loss, such as the death of someone in whom there was an emotional investment. Mourning can be defined as a process by which people recover from severe loss of this kind. Sometimes mourning fails to occur, or is incomplete, and a depres-

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sive state develops. A depressive state could also be called a state of severe apathy, but might be better described as a state of 'failed mourning'.

Mourning is relevant and important because where infantile mortality is massive, the mourning type of response to loss appears to become less effective, and apathy may become chronic. One of Sacha Guitry's films illustrates this in a European setting. It portrays a little boy in a family of nineteen, who is not allowed to eat a special mushroom pie because he has been naughty. The other eighteen people, who do eat the pie, all die. The boy describes his feelings—he is sad, but he is not even beginning to mourn. One person he could mourn, he says, but eighteen is too many. It appears likely that group expectations of successful mourning, through experiences of this kind, can change.

Another relevant point of difference between people is the extent to which real and controllable problems of pain, or loss, or stress, are dealt with by what were earlier described as techniques of projection, of attributing them to external or non-human factors. The technique of blaming external factors is related to hypochondria, which corresponds to saying that some evil force has somehow got inside oneself, is located in a certain part of the body and needs to be driven out by special and appropriate means.

BURTON : The apathy of some communities has long perplexed the public health worker. If people are indeed in a state of mass depression, it is really vitally important that any programme for improving their health should from the beginning give some tangible reason for hope, and continue, stage by stage, until the ultimate goal is reached.

MEAD : Unfortunately, a high level of promise and a low level of delivery, due to a combination of political and economic events and failure of organization, are characteristic of many of the developing countries today, and also of many international aid programmes (Scrimshaw).

HORINE : Some of the lack of success in health or nutrition programmes is surely due to the failure to take into account all the personality needs mentioned, and particularly the need to

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minimize the stress caused by a change in long-established habits.

Though the application of psychological theories to practical matters has been, and can be, of great value, it is not without its difficulties, partly because of the problem of using words (apathy, for example) which have different meanings, for different people and in different contexts. The difference between the idea of hunger and the idea of appetite is sometimes another source of confusion, especially when well-meaning and nutritionally sound efforts to relieve famine prove unsuccessful. In Eastern Bengal, for example, rice is practically the sole staple, and during the famine in 1943 rice had to be procured for the people there; millet, maize and wheat were unacceptable (Chattopadhyay¹).

Hunger and Appetite

It is widely accepted that people will often prefer to starve rather than accept food which is unfamiliar—though the extent to which they will in the end eat anything depends very much on circumstances. It has been noted that after a period of about fourteen to twenty-one days, the hunger striker loses hunger as well as appetite. It appears then that real physiological need may not always correspond to a conscious psychological need or want.

It is also widely accepted, and has been demonstrated in animal experiments, that there are important and pleasurable psychological aspects of food as well as the physiological. One of the worst punishments in some prisoner-of-war camps was to take a man's food parcel and pound it into a mash which contained all the food he required, but deprived him almost entirely of pleasure and satisfaction. Many men would request rigorous imprisonment rather than this particular punishment. Apparently, hunger and appetite have to be considered separately. 'Hunger' is perhaps more familiar to the physiologist, and 'appetite' to those concerned with the psychological aspects of related, but not identical, phenomena.

The Diffusion of Ideas

While demonstrating the universality of certain needs and

¹Background Paper No. 15.

differences among individuals in any society, social research has also emphasized that any idea of society as merely an aggregate of individuals is grossly misleading. Recent work has tried to elucidate the part played in behaviour, not only by membership of a class or caste, but by membership in various small informal groups, such as those which form or modify opinion, or act as channels of communication between larger groups or between individuals, or as means by which the mass media of communication affect attitudes and behaviour.

Many intervening factors influence attempts to communicate through the mass media. Among them the following are important :

- (a) the extent of exposure to the 'stimulus',
- (b) the personal attitude of the reader, viewer or listener to the medium used,
- (c) the latent or 'poetic' as against the manifest or 'propositional' content of the message,
- (d) the predisposition of the recipient to be interested in the topic of the message.

Most important, however, is the fact that individuals differ widely with respect to whether they take up a 'leadership' or a 'followership' role in their evaluation of particular kinds of information or ideas put forward—or of goods offered for sale. A message spread by means of one of the mass media first arouses the interest of *some* people—the informal opinion leaders, a pre-disposed fraction of the total population exposed to the message. They, in due course, communicate their considered views to a relatively small number of people with whom they are in contact and who are willing to follow them.

'Innovators' and 'Influentials'

These informal leaders of opinion, or of change of attitude, may be actual innovators, who will try something personally, or they may be 'influentials'—people whom others follow (Klineberg). In any case, with their small bands of 'followers' they represent a type of social group whose existence is vital for the effective use of mass media. It seems highly probable that the informal network of

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personal communication—the 'grape vine'—may possess a similar structure of leaders and informal groups of followers, and be crucial with respect to attitudes towards processes of change in many communities. It appears also that certain individuals in a society are more ready for change than others, and measurable differences have been demonstrated between those who are ready to change and those who are reluctant (Klineberg).

Identification of Informal Leaders of Opinion

Because of the expanding nature of communication it is not essential in a nutrition education programme to reach all the population at once, but it is essential to concentrate on identifying, reaching and convincing the opinion leaders, who can in turn affect others (Klineberg).

The identification of the relevant informal leaders in a community is often difficult for the public health nutrition worker. They are hardly ever the recognized officials—the chairmen of associations, or the village headmen. Moreover, a different leader may exist for each topic or project or product. Similarly, people with prestige in one sphere do not necessarily carry prestige in another. Guidance as to how these types of people, the 'innovators', and the 'influentials', and in some instances the 'inhibitors', can be identified in a community, can be found in the monographs by Katz and Lazarsfeld and by Likert and Hayes¹ (Klineberg).

MEAD : One word of caution. Techniques which have proved successful in one culture need careful modification before they can be used in another. No definite principles or methods that will work in all societies can be laid down. Moreover, investigations of this kind must be contemporary and continue as long as the programme lasts.

BURTON : The formal opinion leaders, through whom educative change may be initiated, such as members of a government, or in England, the Queen, are frequently also extremely

¹Katz, E., and Lazarsfeld, P. (1955) *Personal influence*. The Free Press, Glencoe, Ill.; Likert, R. and Hayes, S. P. Jr. (1957) *Some applications of behavioural research*. UNESCO, Paris. See also, Coleman, J. S., Katz, E., and Menzel, H. (1957) The diffusion of an innovation among physicians. *Sociometry*, Vol. 20, p. 253.

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effective in bringing about decisive changes in attitudes and behaviour.

WILSON : Each community has to be studied on its own by a kind of social craftsman aware of likely characteristics of informal opinion leaders, and of the likely categories of spheres of influence; he needs to keep his approach flexible and adaptable.

Reference Groups

Direct questioning—even self-questioning—seldom reveals the basic values and aspirations that greatly influence human behaviour, since the values and aspirations are often not consciously realized. They are more readily discovered indirectly, through explicit or implied statements which a person makes about others, or about groups other than his own. Where groups are referred to in this way, as a means of stating positive or negative values, they are known as ‘reference groups’. Research makes clear that this process (known colloquially, in one form, as ‘keeping up with the Joneses’) covers a complex situation. The reference groups which people wittingly, or unwittingly, use to describe their values may be real groups or, more commonly, distorted versions of real groups; and sometimes the distortion is so great that they must be classed as imaginary groups. They may also be negative—‘If they do it, then I don’t’ (Klineberg).

Certain attitudes or decisions may reflect a consensus of opinion or the accepted behaviour of the group to which an individual belongs; others, especially when people want change in the form of economic progress, reflect the attitudes, real or imaginary, of the ‘upper class’ economic groups (Klineberg). In the commercial world it has been found that products vary in the degree to which they are evaluated in terms of group pressures of this kind. Research directed to discovering who are the appropriate leaders or models in a specific area of interest is regarded by the commercial world as an extremely important part of the initial planning of any marketing campaign. In designing community nutrition projects, this aspect might well receive at least as much recognition and attention as it receives elsewhere.

6

*The Social Psychology of Food Habits*¹

Sources of Knowledge

STUDY OF the social psychology of food habits or nutrition is much needed, but at present does not exist as a separate discipline. Anthropologists, sociologists and psychologists have collected many relevant data, but the collection has not been systematic. In some countries, market research undertaken for commercial purposes has gathered innumerable facts, but the facts have generally remained buried in the files of the market research agency. Occasionally, they have been analyzed, and have provided a great deal of information concerning food consumption and food attitudes, and the possibilities of changing food habits.

The Importance of Food Habits

Food habits are deeply significant, and rank alongside language or reading habits in importance in the everyday life of most people. In France, studies of the behaviour of Tunisian Jewish immigrants showed that changes in their food habits occurred very late: the language and the newspapers of their host country were both accepted long before. The immigrants even changed their religious sect before they changed their food habits.

Why are food habits so important to people? To answer this

¹The discussion was opened by Dr. J. Stoetzel.

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one must first ask other questions. What is the psycho-sociological meaning of food habits? How can mass surveys help to further our understanding of how actual food habits have been developed? How can opinions about food, or attitudes to food, be discovered, and how are the opinions related to resistance to, or the acceptance of, changes in nutritional patterns?

Partial Explanations

Not so long ago it was thought that the nature of food habits could be explained through the theory of learning, through conditioning, and through the channelling of ideas. These forces may help to explain how, but not why, a person or a group acquires, at a given moment, a specific set of food habits. They certainly do not explain why these habits are so important to the people concerned, and are so much more resistant to change than other habits.

MEAD : Food habits are not always harder to change than other habits; strong resistance is found only in some people in some cultures. Early feeding experiences seem to be very important. Societies where children are fed lovingly, and where food is a source of great pleasure and delight, later become very resistant to change. The food habits of Italian immigrants to the USA, for example, were very difficult to change, whereas those of certain Germanic groups, where food was treated as one element of a rigid system of discipline, were changed easily. A different situation—one where food is scarce or unattractive, and where the people are forced by their employers, or by economic necessity, to eat something they do not like—also results in rigid food habits.

WILSON : In fact, rigidity or relative inflexibility of food habits may arise in a number of ways. In particular, it may arise either from a benevolent, satisfying and prolonged early food experience, or it may arise from a very high level of uncertainty, or anxiety, with respect to food. This difference is very marked in the United Kingdom where the most rigid food habits are found predominantly in the lower socio-economic group.

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KLINEBERG : A somewhat similar approach to this whole problem is presented by Whiting and Child,¹ namely that the explanation of illness in terms of the ingestion of food of one kind or another may be related to a relatively unsatisfactory feeding experience in early childhood. In societies where feeding practices have been generous and friendly, there is not the same likelihood that food will be used to explain illness in later life.

GYÖRGY : Thirty years ago, when Europeans came to the USA as small children, they did not want to be conspicuous. They first changed their clothes, then their language, but they did not change their food habits because they could enjoy those at home without being seen.

AUTRET : In Marseilles in 1955 a number of Algerians worked in the dock yards, and had to eat at their place of work with the French workmen. The workmen objected, outspokenly, to the smell of the Algerian food. The immigrants came to the social centre and said they wanted the same food as the French workers. Ultimately, a small training course for the wives of the immigrants was organized, so that they could learn dishes that the men could take to work and eat without embarrassment.

On the other hand, gruel used in Haiti as a weaning food is exactly the same as that now used in Ghana and Dahomey. The name is the same, and so also are all the steps in its preparation. While the food habits of the adults have been influenced by the French or Spanish cuisine, the food given to children has remained the same as it was two or three centuries ago.

MEAD : The safest generalization that can be made is, probably, that food habits are always important, and are very resistant to change in those societies where they have been built into the child's early experience in a particular way.

GÓNGORA : This is important at the policy planning level, because the economists often insist that all you need to do to improve food habits is to improve the economic standards of living, and the nutritionists have difficulty in showing

¹Whiting, J. W. M., and Child, I. L. (1953) *Child training and personality: a cross-cultural study*. Yale University Press, New Haven.

convincingly that the problem is not always so straightforward.

Protein Malnutrition and Resistance to Change

J E L L I F F E : The major obstacle in the relief of protein malnutrition is resistance to the introduction of extra foods, and especially protein foods in the first years of life. Resistance seems to arise, in different parts of the world, round different types of food. In the case of children, these foods might be grouped as follows :

- (a) Foods generally avoided at all ages : for example, milk in Thailand.
- (b) Foods thought to be unsuitable for infants or pre-school children. The avoidance of the foods may sometimes, but not always, be related to ideas of disease and its causation.
- (c) 'Ceremony' foods, or foods linked to physiological processes, permitted only after certain traditional ceremonies, or after the child can walk, or has so many teeth.
- (d) Over-valued foods, such as the plantain in Uganda, and rice or bread in other countries.
- (e) Disease-associated foods, that may express apparently isolated ideas as, for example, 'mangoes produce jaundice', or systematized ideas that are part of the local concepts of physiology, health and disease.

P L A T T : The way of life of the whole community may also be a decisive factor in how the children are fed. In the Gambia there were two tribes, one of which was, and always had been, an agricultural community, and the other which had been until recently a hunting community. The latter had never had any opportunity of introducing paps and the like into its baby feeding economy, and mixed feeding started late in the first year. The agricultural people, on the other hand, began mixed feeding early.

The Influence of the Self-Image

A possible explanation of the importance of food habits lies in the concept of the 'self-image'. A person says, in effect 'The food habits

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I have are my food habits. I have formed or accepted them, and now they are part of myself.' In the case of the immigrant, or of a person belonging to a certain class of society, the self-image must be understood mainly in terms of group identification, but also in terms of the status and role of the person concerned. Here the underlying assertion is 'I have a right to eat a certain diet' and at the same time 'I, as a member of this class, have an obligation to provide myself with a certain diet'. Food habits are also a form of individual self-expression, just as much as clothing or reading habits or political attitudes.

MEAD : This connection between the self-image and the food one eats is also important with reference to the willingness to change completely, which is just as emotionally significant as resistance to change. If each day you make yourself 'yourself' by eating the familiar food of your class or group—a gentleman or rich peasant and not a poor city dweller, a Muslim and not a Christian—and then you give up this food, and change to something different, you take an exceedingly drastic step. Especially with children, familiar food plays its part in the work of 'maintenance'—or reassurance that the world is the same and stable—and sudden change is sometimes frightening.

DEN HARTOG : In Holland, a group of Indonesians at first showed great enthusiasm about belonging to the Netherlands community, demanding Dutch food and dressing in European clothes. When, however, difficulties arose with the Netherlands government, and they felt insecure and somewhat resentful, they changed back to their own food, though they continued the other European habits they had adopted.

Personality and Food Habits

Attempts have been made to relate opinions to various personality traits. An analogous study of food habits would probably be extremely revealing, and might produce a number of new criteria, useful in clarifying the relationship between a person and the food he eats.

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The Taste of Food

Obviously, the first of these criteria is taste. A person eats a certain food because he likes the taste, but that includes many qualities, such as the smell, the roughness or smoothness, the temperature or colour, the dryness, softness or hardness, many of which may be important to the individual. The limited facilities for cooking or serving food in many communities have a strong influence on the kind of food people learn to like. In rice-eating regions where beri-beri is a problem, educational efforts to persuade people not to wash the rice before cooking it are unsuccessful, however persistently they are made. Rice with a certain taste is liked, and where cooking facilities are few, this can only be achieved by numerous washings before cooking (Anne Burgess).

DE ZAYAS : When we talk about food habits, we usually talk about the food. We say that Mexicans eat *tortillas*, and Puerto Ricans eat rice and beans. But it's how the food is prepared that makes all the difference. I eat beans and Mexicans eat beans, but the beans I eat are not the beans the Mexicans eat : they are not the same food. Rice to the Puerto Rican is rice if it is the short grain rice and has a little lard added to it. School lunch programmes on the mainland where rice was served because the nutrition workers knew 'Puerto Ricans like rice' have sometimes failed completely because the rice was mushy or served with raisins and sugar added, and to most Puerto Ricans this is not rice, but something that tastes horrible.

The Image of the Food

The second criterion is the 'image' of the food in question. A food may be thought of as 'heavy' or 'light', or 'hot' or 'cold'. The 'goodness' or 'badness' of a food in our cultures may be its 'healthiness' or 'unhealthiness', but may be something quite different in other countries : so also its high or low prestige value, or its quality of being forbidden, permitted or recommended food.

MEAD : The image of a food includes also a series of other elements. People may eat a 'main dish', or certain foods are

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regarded as only for certain occasions or for certain people, or to be served in certain ways.

JELLIFFE : In all countries, foods that are socially 'shameful' are to be found, even though they may be nutritionally valuable. One very remote hunting tribe in Africa will eat baboon, hyena or vulture only in a very intimate group. An invitation to a visitor to partake of these foods is proof that the tribe accepts the visitor.

BURTON : Material factors must have considerable influence on the kind of image a certain food has in the minds of its consumers; for instance, whether its supply is dependable or capricious. The potato was initially so successful in meeting the needs of the people in Ireland, that it created an image which has persisted, in spite of subsequent disastrous 'potato famines'. This quality of economic or agricultural reliability must play a large part in building up the image of the 'over-valued' staple food in most countries.

All these qualities have some part in building up the image of the food a person eats. Much more research is needed to determine the various categories to which specific foods have been assigned in different cultures and regions. The possibilities are numerous : week day, Sunday or holiday foods, foods for the healthy or sick person, for heavy work or for certain occasions or tasks. All these characteristics of foods are taken into account by the person, and related to his image of himself as a certain kind of person in a certain situation in life. In Catholic wine-growing countries, for example, red wine seems to be related to the idea of blood, and, like bread, has a special place in the minds of the people. It is probable that these feelings about red wine (which do not extend to white wine) and bread, are related to the image of the food and the body-image, blood and flesh.

The Cosmic Ideology and Food

These different characteristics are also intimately related to a third criterion, the general or cosmic ideology of the individual or the group to which he belongs. Overshadowing food images, some form of cosmic ideology shapes popular food theories and food practices.

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In the Hippocratic writings, foods or food theory were linked to human physiology, and human physiology to physics, and even to metaphysics. As in all ancient medicine, the idea predominated that certain elements should be properly blended and balanced in the natural world. In the body also, there should be the same kind of balancing of the elements, through a proper combination of 'humors'. The diet a man selected should be in agreement with the balance of elements in his body.

The nutritional opinions of Hippocrates are thus related to the opinions of other philosophers concerning the nature of the cosmos. According to this view, malnutrition in man is exactly the same as disorder in the world. Similarly, in the East, the teachings of Susruta spread through India to most of South-East Asia, and many relating to health are still valid today (Horine). The humoral concepts of Hippocrates spread from India to Greece, and thence to Europe, and later, with the Spanish culture, to the Western hemisphere. There certainly seems to be a common background to many of the classifications of food found in the East and in Latin America (Jelliffe).

Ethical Concepts and Food

The ideas that a person or group has about the whole environment are important as far as food habits are concerned, because the cosmic ideology extends also to the ethical field. Preoccupation with food may be regarded as serious or futile, natural or unnatural, necessary or unnecessary, permitted or forbidden, good or bad by the individual or the group. For instance, greediness or frugality are socially-defined traits of personality in our society and in others. Too rich feeding could therefore cause feelings of guilt, and thus complicate taste preferences.

In Thailand frugality is a virtue. Efforts to improve the nutrition of young children are complicated by the fact that the children are brought up to take only the smallest quantity, sufficient to flavour the rice, of the protein-containing side-dish. Greediness with this dish earns strong disapproval, undiminished even where economic necessity does not exist (Anne Burgess).

The Problem as seen by the Social Scientist

Cultural and Personal Variations

Illness and states of well-being are understood differently in different cultures, even in cultures with a common scientific background. It seems that Spanish and, incidentally, French concepts of illness differ in many aspects from American. In the more or less complex European society, if something goes wrong with one's digestion, the liver is blamed, but elsewhere the stomach. In many developing countries, the problems of nutrition are linked to the concepts of illness held by the people. The concepts may be a mixture of ancient and more modern ideas. It is of value to know the historical origins of ideas about disease because they provide useful guides to the kind of ideas held about food (see p. 46).

The group differences in theories of health or illness are found also in theories of nutrition. There are, in addition, personal variations stemming from the relationships between the personal food-image and the personal image of body or self. A person who considers a certain food 'unhealthy' or 'heavy' does so because he has a certain kind of physical self-image. New insights into the social psychology of food habits might be gained by specialized study of the image of body or self in different cultural groups.

There are many other socio-psychological problems in the study of food habits, such as the dynamics of food consumption—the cultural forces or the individual development of particular habits or attitudes—and the problems of change in the culture and in the individual. Some of them can be approached through the methodology proper to social psychology (see p. 132).

PART II

*Approaches to the Relief of Protein
Malnutrition*

CURRENT ACTIVITIES

FURTHER PROBLEMS AND POSSIBILITIES



7

The Role of the International Organisations in the Relief of Malnutrition¹

Co-operation Between the Organizations

IN AN international effort to relieve malnutrition it is obvious that close co-operation is essential between an agency concerned with improving standards of public health, and one concerned with raising standards of living through the increase and improvement of food supplies. With the aid of a Joint Expert Committee established in 1948, WHO and FAO, materially supported by UNICEF, have worked closely together on various nutritional problems in different parts of the world.

They have used their unique international facilities to stimulate interest in the problem of protein malnutrition by carrying out various surveys to define the character and extent of the problem, by organizing refresher courses and seminars at which field workers and others from different countries could become familiar with the facts relating to the diagnosis, treatment and prevention of nutritional disease, and by organizing conferences at which authorities on different aspects of the problem and on related problems could come together and exchange their knowledge and experience.

¹Based on a paper prepared for the conference by the Nutrition Unit, WHO.

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The Work of WHO

There are two main approaches to the alleviation and prevention of protein malnutrition, and both involve changes in food habits.

The first is the encouragement of the proper use of a wider variety of foods within the family. The second—the encouragement of procedures which will prevent the onset of protein malnutrition in the child, or facilitate its early recognition and treatment—has been very much the concern of WHO in recent years. Among these procedures are attention to the health of the pregnant and nursing woman; education of the future mother (beginning preferably in the later school years and continuing throughout the ante-natal period) regarding her own health and nutritional needs, and those of her child; the development, where necessary, of suitable resources whereby she can feed herself and her child adequately; the establishment of facilities for the early diagnosis and treatment of protein malnutrition, and the supervision and supplementary feeding of children at risk.

One of the great difficulties in the improvement of standards of health in the less developed countries today is the lack of trained personnel. In the case of nutritional disease, there is the complication that many of the doctors and public health nurses now working in these countries have had little opportunity to become familiar with the different nutritional disorders of children, and particularly with the recently recognized syndrome of protein malnutrition. WHO has consistently tried to help countries to improve present paediatric, midwifery or public health training, so that future medical and health personnel at all levels will act from a sound knowledge of maternal and child health. With UNICEF assistance, paediatricians, paediatric and public health nursing instructors, and health education specialists, have been provided to numerous countries to train local graduates and students.

The organization and staffing of demonstration areas, with matching personnel from the country concerned, has also been a major activity. In the areas, a variety of public health personnel have worked together, for example, as a maternal and child health team, learning, as they worked, how to provide the curative and

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preventive services required by a community. Health education is an indispensable part of these services, and education related to the nutritional aspects of child health has been one of the chief functions of MCH personnel.

In 1953, an effort was made to assess the amount and quality of the nutrition education carried out in national and WHO-sponsored maternal and child health centres in several countries. The results were disappointing. On the whole, the demand for curative and preventive services, and the mechanics of skim milk distribution, left little time for more than hurried instructions to the individual mothers, though here and there group teaching and effective demonstrations, sometimes during home visits, were being carried out. Later, an anthropologist, acting as a WHO consultant, studied the social factors associated with protein malnutrition in one region, and found that a good deal of the nutrition education offered to the rural and semi-rural mothers was unsuitable in content and ineffectively presented.

Efforts have therefore been made to raise the standard of nutritional knowledge and educational practice among public health and allied personnel, in the belief that all medical and health workers, as well as teachers in schools and other educational centres are potential health educators and should be used as such. The highly trained nutritionist or health education specialist functions most usefully, it is thought, at the administrative level in countries at present developing their public health services. In these countries, the realities of life, and the general trend to develop a unified curative and preventive service, make the separation of nutrition education and health education impossible, especially at the village level.

The efforts have taken various forms. A monograph on nutrition¹ has been published, and international seminars and refresher courses on nutrition, or health education, or both, have been organized in various regions, usually in co-operation with FAO. With UNESCO, the role of the school teacher as a health educator is being studied, and several expert committees have met to

¹Jelliffe, D. B. (1955) *Infant nutrition in the tropics and sub-tropics*. WHO Monograph Ser. No. 29. WHO, Geneva.

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consider different aspects of the problems of malnutrition and of health education of the public.

Aware of the difficulty and danger of trying to alter long-established food habits in isolation from other aspects of the culture, WHO has sought the help of anthropologists in clarifying the role and importance of various factors in Indonesia,¹ Guatemala² and Peru.³ Their reports, with others from various sources, have emphasized the complexity of the educational problem, and the value of the 'real life' demonstration—the sick child cured, or the ailing child putting on weight.

But neither the sick child nor the child on the verge of malnutrition can be rescued, with some assurance of permanency, where no suitable protein food is available. In these circumstances, a cheap food of high quality is needed, and the development of such a food has been the main endeavour of research workers in several parts of the world during the past ten years. Financial support has been given to assist in the preparation of foods from materials not now used, or used only to a limited extent, in child feeding. Meetings and the exchange of workers from leading research institutes in different parts of the world have been arranged, and considerable progress has been made as a result. The suitability and safety of any food, especially for young children is a highly specialized matter and was fully discussed at the second meeting in this series. Ultimately, a small advisory group was formed to give technical guidance and to review progress in research from time to time.

The various possibilities in the use of new foods, and in the better use of already available resources, have not yet been fully explored. As well as the obvious channels—hospital, MCH centre and general distribution—WHO has suggested that rehabilitation centres, where the child on the verge of, or recovering from, malnutrition could be supervised and fed, should be set up. The

¹Freedman, M. (1955) *A report on some aspects of food, health and society in Indonesia*, WHO. MH/AS/219.55 (unpublished).

²Freedman, J. D. (1957) *The social factors in the etiology of infantile pluricausal syndrome (kwashiorkor) in Guatemala*, WHO, MH/AS/13.57 (unpublished).

³Wellin, E. (1954) *Child feeding and food ideology in a Peruvian village*, WHO MH/AS/160.54 (unpublished).

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mother would take part in the preparation of the food and be instructed in the care of the child. The centres would therefore have a considerable educational value and, it is felt, be effective in the prevention of severe malnutrition.

Other measures for the relief and prevention of protein-calorie malnutrition, such as the raising of the general economic and productive capacity of the people, are outside the immediate interest of WHO, except at the policy planning level. The UNICEF Expanded Nutrition Programme aims at increasing food production at the family or community level, and has technical guidance from WHO and the co-operation of the local health personnel at the community level.

The work of other sections of WHO in the field of environmental sanitation and communicable diseases, malaria, public health administration, and so on, all contribute to the nutritional improvement of the family and the child. Without the full understanding and support of the public health administrators in any country, it is impossible to plan and carry out successfully any nutritional improvement programme on a large scale.

The Work of FAO¹

The Governments of the majority of developing countries are making great efforts to improve the lot of the farmer and to close the gap between food production and the needs of the population. There has been very rapid expansion of rural education since the recent war. The number of irrigation and re-afforestation projects, and land reform movements, is impressive. Many governments have established co-operatives to enable farmers to band together for purposes of buying equipment, improved seed, fertilizers or insecticides, or marketing their crops at more favourable prices. The co-operatives help towards the solution of some of the fundamental problems of the farmer, as do agricultural credit systems that enable him to borrow at a reasonable rate of interest in order to improve his equipment and practices.

Encouragement of Social and Cultural Changes

No plans or programmes should be initiated before a careful study

¹Based on a paper prepared for the conference by the Nutrition Division, FAO.

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has been made of the cultural and social factors responsible for the present attitude of the farmers. Here the advice of the sociologist or anthropologist is likely to be invaluable. It is easier to overcome cultural barriers or to improve traditional techniques in production when a strong economic motive exists, and education has therefore more hope of success if it bears on the production of cash crops. It is also easier to increase the production of foods already accepted than to introduce new foods. In under-developed areas changing food habits means, in most cases, changing the food habits of the producer—a good reason why agriculture extension workers should be trained in nutrition.

Although the widespread distribution of a nutrient factor may do much to improve the diet of a population—the use of thiamine in Japan is an example—it is generally believed that the sound long-term approach to the improvement of nutrition is through an education programme. In general, the channels of education that have been tried are maternal and child health, welfare and other health services, schools, extension services and community development programmes. FAO, whilst agreeing that health services provide an excellent opportunity to teach mothers how to feed their children, believes also that an approach to the whole family in their homes is of great importance and that teaching through the schools, complemented by education through extension services, is probably the approach most likely to succeed. *Nutrition education in schools* may help to solve the problems of the home, and the home may participate in solving the nutritional problems of the school children. For instance, it has been shown in Israel¹ that families with school children receiving education in nutrition have a better diet than those with no children of school age. The dual approach prevents rivalry in authority and contradictory views on what should be the diet of the child.

FAO has assisted a number of governments in introducing the teaching of nutrition into the school system. Problems of this approach include the addition of a new subject to a curriculum

¹Israel Institute of Applied Social Research and Department of Preventive Medicine of the Hebrew University—Hassah Medical School, Jerusalem. Report: Changes in food habits in the Yemenite and Iraqi communities in Israel (1958, unpublished).

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that is already crowded, the lack of suitable text books, difficulties of interesting the teachers, of training them to carry out the programme adequately, and of providing them with technical guidance on how the subject should be taught. Even when teachers have been given a training course in nutrition, and possibly in school meals and simple horticulture, the problem of arranging for supervision, and for refresher training, remains. It is worth trying to overcome the difficulties, because teaching aimed at the primary or secondary school children, particularly those in the upper forms, provides a knowledge of the importance of food which can be reflected in the better nutrition of the next generation.

The association of teaching of nutrition with school feeding, school gardens and poultry raising, as carried out by FAO and INCAP in primary schools in Guatemala, offers a practical approach, provided teacher training and a teacher's guide can be made available, and provided close co-operation exists between the school and the family, and the nutrition, health, education and agriculture extension services. Many countries are now using this method. In Ecuador, an FAO expert introduces the teaching of nutrition systematically into primary schools and secondary colleges through subjects of the normal curriculum such as reading, writing, arithmetic, geography, science and hygiene.

Home economics is taught in many secondary schools and provides an excellent channel for education in nutrition, especially when it includes practical instruction in methods of preparing food for the family.

Agriculture and home economics extension services are contributing much to the teaching of better dietary habits. For example, in Iran and in Egypt, production and consumption of vegetables has increased widely through the activities of the extension programmes in encouraging school and home gardens. The home economics extension programme of FAO has shown that diets may be improved by teaching families how to use better methods of preservation, storage and cooking. The programmes are usually carried out through women's and youth clubs but an approach to the whole family is the aim, and a close link is made with agriculture extension services.

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A type of programme in which FAO has recently become interested aims to encourage the use of one or more specific foods. The first projects were concerned with fish and fish products: others will deal with the consumption of oil seed products. In Mexico City, fish consumption was doubled within a short period in certain districts through the use of mass media combined with work in communities and schools. A similar result was obtained in two pilot areas in Morocco, where fish consumption was trebled within a few months. The long-term effect of these programmes remains to be seen.

While the Moslem population of Morocco does not object to fish, tests carried out in the Cameroons showed that fish was acceptable to all except the Fulani, a Moslem group. Some groups in East and Southern Africa will not eat certain types of fish, and therefore will be suspicious of fish flour in which they cannot recognize the type of fish they are eating.

It is desirable that women and children should be encouraged to eat eggs, but in many countries there is opposition that needs to be studied by the anthropologist. Too often, the eggs are sold.

In all these programmes, often carried out in co-operation with WHO and UNICEF, FAO has supplied personnel for preliminary surveys and for implementation, for the training of local personnel and for the preparation of teaching aids. At present, twelve projects are assisted by FAO, and by the end of 1961 the number will reach 40.

Nutrition services, agriculture and home economics extension services, as well as health services and education departments, have encountered many difficulties in their efforts to improve nutrition. Among these difficulties is the lack of basic data on patterns of living, and on cultural values and beliefs. In the absence of such information the programmes have been rather conservative; FAO has attempted to promote the consumption of foods already known and accepted, but sometimes little used, rather than to introduce new foods. It is likely, however, that milk, fish and egg consumption might be developed if we had a better understanding of what they mean to the people. It is likely also that the cultivation of new types of food of greater yield, or of greater resistance

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to pests, and the consumption of certain nutritious and relatively cheap foods, might be further spread and increased if we knew how to overcome the natural resistance of the people to change—a resistance that may at one time have been wise. Here the co-operation of the anthropologist is again necessary.

A NOTE ON PROGRAMMES ASSISTED BY UNICEF¹

UNICEF provides assistance to Governments for programmes to combat malnutrition in children, and is therefore deeply concerned with food habits. The contributions by WHO and FAO, with whom UNICEF collaborates closely, have covered the pertinent technical considerations in some detail. The activities of UNICEF on which this conference has a direct bearing are described briefly here.

UNICEF assists Governments, at their request, in programmes for the welfare of children. It works in association with, and under the technical approval of FAO, WHO, UNESCO and the United Nations Bureau of Social Affairs. In the years immediately following its beginning in 1946, the primary aim was to provide emergency aid in the form of food, clothing, medicine, etc., for the children of the countries devastated by war.

Since 1952, when the organization was officially re-named the United Nations Children's Fund, long-term objectives have been increasingly supported. Most of the allocations have been for materials and transport, and stipends for the training of local personnel. In view of the urgent and large scale needs, the interest in training has gradually broadened, and has included, from time to time, assistance to institutions for the establishment of teaching posts in certain fields, for example, paediatrics. Much emphasis has been placed on the development of health centres, and of maternal and child welfare centres. More recently, mother-craft and home-craft projects, which provide education through women's organizations, have been supported.

Large donations of milk powder have been shipped to many

¹Contributed by Dr. Lester J. Teply.

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countries, for distribution through health centres and school feeding programmes, but this activity is not regarded as a long-term solution to the nutrition problems of the countries. For many years, UNICEF assistance, in the form of engineering advice and equipment, has helped to rehabilitate or to establish milk-processing plants in several parts of the world.

UNICEF's participation in the FAO/WHO programme for the development from local resources of alternative protein-rich foods for children is part of an 'expanded nutrition' enterprise of recent years that stresses nutrition education and certain related practical activities.

Assistance is also given to surveys designed to define local nutrition problems and the possibilities of remedial action, and to activities, such as school and community gardening, and small animal husbandry, directed towards the increased production and consumption of protective foods.

In each of these programmes assisted by UNICEF, the importance of understanding the significance of food habits is obvious.

8

Difficulties and Possibilities of Remedial Action¹

THE RELIEF of malnutrition, and the changes in food habits that it is likely to cause, must sometimes be regarded as part of a long-term plan, and sometimes as a short-term emergency (Gómez).

Long-Term Change

On a long-term basis, food habits cannot be changed as if they were a nuisance that had to be stopped. Without the long-term supporting changes already mentioned, in attitudes to health and disease, in education and in economic and agricultural conditions, any attempt to achieve lasting changes in food habits is likely to be futile.

The first step may have little to do with improvement in nutrition. It must be founded on what the people themselves want, and can take part in accomplishing. The first successful achievement, however small, will increase hope and confidence in life (Wilson), widen the horizon of needs and motives (Horine) and create the possibility of ultimate all-round development as a community (Autret).

Meeting Present-day Needs

Various kinds of emergency situations exist today. On the one

¹The discussion was opened by Dr. Margaret Mead.

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hand you have babies in front of you who are going to die—an 'emergency' that may last more than fifty years (Anne Burgess). On the other, there are great malnourished populations who have been depressed through hundreds of years by various forms of economic deprivation, and are now depressed in apathy (Wilson) and resistant to any change. This is an emergency because we have just realized it (Jelliffe) and also just realized its importance in the political sense (Sebrell).

Knowledge, not Intelligence, lacking

In dealing with these emergency situations we must realize that every time we fail to tell the people the reasons for our actions, we are reducing the status of the people and their state of responsibility. Too often in the past, we have not accorded to the people whom we were attempting to change, full dignity and full rights to change in every respect. For example, we have expected the village woman to change some of her habits, but to continue to breast-feed her child. It seems unlikely that she will do so if the prestige figures in her world have changed to bottle feeding.

All through the centuries, peasants have accepted the position of being told what to do by the elite who 'knew best'. There seems to be a tendency to perpetuate this situation today in places where modern health public practices are being introduced. Everything 'the native' does is regarded as superstition, and everything brought in from the modern world, whether it is three meals a day or orange juice, is regarded as science. If you compare the response to new ideas of these depressed peasant groups who have always been regarded as inferior in intelligence by some one or other, with that of primitive people who have not been so treated, you will find a great difference.

Experience has already shown that when primitive people get the idea that they can do anything that more modern, or higher caste, people do, they do it. I want to stress, that some day, when the level of education, and the economic and other conditions of life have been changed, we can expect that everyone will share our scientific ideas.

Difficulties and Possibilities of Remedial Action

The 'Chameleon Approach'

J E L L I F F E : I fully agree that the ultimate aim is to spread scientific knowledge, but this is going to take a long time, and meanwhile there is going to be a colossal slaughter of children. In our child welfare clinics today the majority of the mothers have some food attitudes which are not scientific. If these attitudes block the way to the child getting protein food, we have, perhaps regretfully, to use the 'chameleon approach' whereby we can blend with the colour of the particular cultural pattern at a certain point and introduce our change without it being noticed. Otherwise the child is not going to get the necessary food at all.

For instance, in rural child welfare clinics in Western Bengal, diarrhoea in children can be treated successfully by adopting three local dietary remedies, which conform exactly to needs suggested by scientific knowledge: hand-mashed flat rice as a source of carbohydrate, the Indian wood-apple (*Aegle marmelos*) that provides pectin, and acid buttermilk. The buttermilk being diluted and defatted, and a 'cold' food, is particularly suitable from all points of view.

Priming the Pump

P L A T T : In some circumstances, changes in food habits must wait until the people have reached, with the help of the medical and public health services, a certain degree of health and with that, some recognition that better health is a real possibility.

In one area a successful 'chameleon approach' was the cultivation of cash crops along with the provision of individual curative procedures to improve the health of the producers. At the end of the first year the success was evaluated by the villagers, not in agricultural terms, but in the statement: 'Before, our babies died; now they live'. This form of 'advertising' or demonstration of what we have to offer, by means of some programme in which the people themselves participate and which yields relatively quick results, is probably the most effective way of transmitting knowledge to people who are not yet ready to accept scientific explanations of their ill-health.

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The Relief of Malnutrition

AUTRET : Various methods of dealing with the problem of protein malnutrition are being tried today. They include the improved production and increased consumption of natural foods rich in protein, the addition of protein supplements to deficient diets and the enrichment of the traditional staples with protein-rich foods. In some circumstances, efforts are being made to introduce new foods, or mixtures of foods, that are of high protein value. Although concentration on the child's diet is often essential, it may be that improvement of the diet of the family as a whole is the sounder approach, since it is unusual for special food to be purchased or prepared for the pregnant or lactating woman or for the toddler.

Supplementary Feeding Programmes

SCRIMSHAW : In the long-term view, the distribution of foods not likely to be produced in the near future, such as milk in countries where milk is not a traditional food (Kelly) cannot be considered satisfactory, except in so far as it stimulates the production and consumption of foods already indigenous to the area.

DE ZAYAS : If there are any possibilities of producing the supplementary food locally, intensive work with the agricultural people in the area should accompany its introduction. If sufficient interest is aroused the results are good and fairly rapid.

The Enrichment of Common Food Stuffs

AUTRET : Enrichment of natural foods or processed foods is useful if it can be done economically, at a nutritionally significant level, and provided the enriched food is widely consumed. Where malnutrition exists, however, there is not enough common food processed at the community or industrial level to make enrichment effective : most staple foods are processed and prepared in the home.

SCRIMSHAW : There are limited possibilities and great difficulties in improving protein consumption by adding something like dried skim milk or fish flour to basic cereals. The same applies to the enrichment of wheat flour with lysine.

Difficulties and Possibilities of Remedial Action

ZUBIRÁN : In Mexico, as in Guatemala, the amount of maize eaten is very large—about 380 g. per capita per diem.¹ Very small quantities of beans and meat are eaten with the maize, and no milk. These are the local sources of protein and they must be improved in quality without delay. The enrichment of the maize flour with chickpea has been tried. The whole pulse cannot be used, because as with other high-protein supplements such as fish flour or cotton seed flour, even a small amount changes the physical characteristics of the *tortilla* flour; but a high protein extract of the chickpea has been produced that provides a useful quantity of protein without altering the taste of the flour or its fitness for *tortillas*. If the women could be educated to use commercially ground maize flour, prepared with lime, not only would one of their chief burdens—the preparation of the *masa* for *tortillas*—be taken away, but the enrichment of the maize with the chickpea would become practicable.

Where malnutrition takes the form of general under-nutrition, national action to improve and increase the production of the traditional foods seems to be the first and surest approach (Gómez). It should be accompanied by education to encourage a fuller use of the resources that are available but that are often, for one reason or another, ignored (Cravioto).

Improving the Family Diet

AUTRET : For a long time to come the child will not receive better treatment than any other member of the family. The better nutrition of the family is therefore important. This implies a balanced agriculture (Platt) and nutrition education in rural communities must therefore often begin with education in agriculture.

BURTON : Countries which have chosen better nutrition have put an enormous amount of the national investment into nutrition in terms of agriculture, maternal and child health centres, and food industries. By other techniques such as sub-

¹Zubirán, S. (1960) Estudio epidemiológico de la desnutrición en México. *Salud públ. Méx.*, Vol. 2, p. 111.

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sidizing certain lines of food they have influenced nutritional patterns. For example, in Northern Ireland, previously one of the agriculturally backward areas of Europe, the Agricultural Department has adopted the policy of subsidizing only certain breeds of fowl and pig, which research has shown to be productive. This has resulted in a prosperous exporting economy, and has transformed the countryside. Any plans for the improvement of the feeding of the family as a whole must originate at the level of political policy, using technical advice on the nutritional needs. Governmental interest in nutrition in general, or in the status of women and children, may have to be cultivated by the careful study of the government as the instrument of power, or of the needs and aims of its individual members (Wilson).

Ideally, we want to improve the diet of the whole family, but this will take time and meanwhile the children of the next generation may become permanently damaged. We know today that in many places new things such as modern clothes are bought for children while the parents are still wearing traditional clothes. Education to change the picture of the child between the age of weaning and, say five, and to develop a new nutritional style which says 'These young children must be fed differently from adults' seems to be the best approach. As the studies of miners in Great Britain during the depression showed, it used to be standard procedure to feed the man, and let the children suffer. But this can be changed (sometimes in one generation, as we have found in the USA), because the appeal is to the natural human tendency to protect and care for children.

DE ZAYAS : Like many others, we are trying to teach our mothers how to feed themselves and their children. We give them milk, but the nurse on her home visit usually finds that it is being diluted so that the man, and the rest of the family, can also have some. I cannot see this habit of sharing the milk with the father or other members of the family changing in one generation in our country, or in most of the Latin American countries.

The Difficulties and Possibilities of Remedial Action

DEAN : In Uganda we find that when we give away milk regularly, we ensure the regular attendance of the mother at the place where the milk is given out, and that, I believe, has great general value and some indirect nutritional value.

The Introduction of a New Protein-rich Food

SCRIMSHAW : For various reasons (see p. 42) a vegetable mixture seemed to be the only practicable solution to the problem of protein malnutrition in Guatemala. The new food had to fit existing food patterns and prejudices, and be acceptable in taste, and it had to be suitable for young children : for sterility it should be cooked. The INCAP product, Incaparina, fulfils these requirements. It was designed chiefly as a source of proteins, and to be fairly complete except in regard to calories, which can usually be supplied easily by sugar or bananas.

The mixture, consisting of maize, sorghum, cotton seed flour, dried yeast and synthetic Vitamin A, is the result of eight years of experiment with animals and in the laboratory, and of trials with children. It is prepared in such a way that it can be used for the making of the cereal gruel, known as *atole*, that is extremely popular. Its nutritional value, as shown by a series of nitrogen balance experiments, is high. It may be flavoured to taste with sugar, cinnamon, vanilla, aniseed, chocolate, and so on, and served either hot or cold. It can also be substituted for two-thirds of the flour in most non-bread recipes using wheat flour, and can be added to puddings and soups.

In order to determine its acceptability, 76 needy families in 4 Guatemalan communities were selected by local Health Centres, and sufficient amounts were provided for each pre-school child to drink three glasses of the *atole* each day. The trials lasted from 17 to 19 weeks. Acceptance was extremely good to begin with, and tended to improve further during the trial period.

In El Salvador, Honduras and Nicaragua, and in other trials in Guatemala, similar results have been obtained.

These promising findings led the Government of Guatemala to authorize a pilot project, starting in March 1960, for the

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production and distribution of Incaparina (Mixture 9B), using cotton seed flour from El Salvador. The object of this trial was to obtain basic data for determining what production capacity and installations were necessary. The mixture was distributed to stores in 43 towns widely scattered throughout most of the country; communities were chosen that had active Health Centres, or other units that could recommend Incaparina to the most needy families. The initial production, 8,000 bags per day, proved insufficient even before distribution to these towns have been completed. Although production was raised to 12,000 bags a day (60,000 per week), the demand was so great that distribution outside the capital city became less and less adequate. This situation cannot be corrected until the projected completion of a modern plant capable of producing at least three tons a day to satisfy the country's expected needs.

(*Postscript*) Incaparina is sold in Central America at 4 U.S. cents for a bag containing 75 g. (2.7 oz.), enough for 3 glasses of *atole*. This is the equivalent of slightly more than a British penny a glass, and the nutrient value is similar to that of an equivalent quantity of milk. Milk, when it is available, sells in Central America for about 5 U.S. cents per glass. Raw material costs for the commercial production of Incaparina in Central America are about 5 U.S. cents per pound. Ordinarily 18 glasses of Incaparina can be prepared from one pound (450 g.). Depending on the type of packaging, manufacturing and packaging costs can be expected to add 2 to 3 cents per pound, so that the product can be made ready for commercial distribution for 8 cents per pound or less in most of the technically under-developed countries where suitable cotton seed flour and other essential ingredients are available or can be economically imported.

CRAVITO : In Mexico we have been fortunate in finding a simple and practical way of incorporating fish flour into basic foods without changing traditional dietary habits. We have succeeded in adding fish flour to various kinds of bread, cookies and biscuits, and to all types of bean preparations. A supple-

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ment of 10 per cent of the fish flour has been used in noodles, which are very popular in making soups. A supplement of three to five per cent is used in *tortillas* and in other foods commonly used by the low-income groups. In all the foods neither the flavour, the odour nor the texture has been modified by the addition of the flour.

In Tlaltizapan, 80 families, with a total of 560 persons, have been supplied with hard biscuits and noodles, with and without fish flour in alternate weeks. One hundred per cent of the families accepted the noodles and 93 per cent liked them. The remaining seven per cent consisted of families who were not accustomed to soup as part of their diet, but who consumed the noodles during the experimental period. The biscuits were eaten mostly by children of pre-school and school age, to whom they were given, by the mothers, as a delicacy.

DEAN : (*Postscript*) A mixture of cheap foods, available locally, has been given extensive and successful trials in Uganda. Whole groundnuts, maize flour, cane sugar and cottonseed oil are baked into a biscuit, which is hammer-milled to a fine powder. Dried skimmed milk is then added : it was found that if the milk was cooked with the other ingredients some of the lysine of the mixed proteins could not be properly utilized. A study of the possibility of commercial production has been made by an FAO consultant and it was concluded that the costs of ingredients, manufacture and packaging should not exceed 75 E.A. cents (= 11 U.S. cents) for 1 lb. (450 g.). As the finished material contains 20 per cent protein and about 25 calories for each g. protein, this price is low in relation to the local cost of fresh milk (70 E.A. cents for 1 pint : 570 ml.). Difficulties have arisen because the use of biscuit-making machinery entails the toasting of the groundnuts before the cooking of the biscuit, and the toasting may reduce the nutritional value.

Another product used in Uganda is a mixture of dried skimmed milk with sugar and cotton seed oil, in which the ratio of protein to calories is the same as in full-cream milk. The price of this product is about one-third that of fresh milk.

AUTRET : Caution is necessary in the promotion of these new

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foods, even if they fit in with the local dishes. A number of other products of this type, based on other ingredients, have been prepared; for instance, mixtures of groundnut flour and millet flour, and of wheat and fish flour.

Every effort should be made to promote the use of these products by the families, or, better, of the ingredients such as fish flour or cotton seed flour, so that the family need not buy the staple foods that they themselves could produce. The problem is twofold: how to introduce a special baby food on the market and how to promote the consumption of new foods, such as cotton seed flour, that are not much more expensive than the staple foods and that can be incorporated, by the house-wife, in the regular family food.

The introduction of a new food, unless it is carefully tailor-made for a special situation, as Incaparina has been, usually carries with it some traditional resistance, which will show up in various taboos, magical measures and inversions. Public health workers should be aware of this possibility. An allowance for these non-rational elements might be systematically built into programmes of improvement as a protection against such resistances.

For example, during the recent war, people from the south-east of the USA who previously could get very little lean meat, worked in a defence area and could buy all they wanted, but they tabooed it to the mother immediately after childbirth. Again, in some communities milk must not be given when a child is sick, or may be given only when the child is sick.

Enforced Change

Improvements in the nutritional status of a population can be achieved by the legally enforced enrichment of common foods, as, for example, in the nation-wide control of goitre or pellagra.

Changes in food habits can be encouraged and hastened by government action in the form of taxation, legislation or the preferential subsidizing or importation of foodstuffs (Sai). Wartime experience in Great Britain and the USA (Hundley) has shown what can be done in a national emergency by nutritionally enlightened legislation which the people feel is justified and fair.

The Difficulties and Possibilities of Remedial Action

Autocratic action, however, even with the best intentions, is likely to end in trouble, either for the government or for the people, except under certain conditions (Wilson).

Conditions for the Success of Enforced Change

The success of changes in food habits brought about by government action seems to depend on :

- (a) whether the majority of the people already understand and accept the necessity for the proposed action,
- (b) the degree of skill and knowledge that has been given to ensuring that a new, or supplementary, food will have an acceptable place in the dietary pattern and minds of the people,
- (c) the goodwill of the government towards the people, and
- (d) the unanimity among the members of the government itself as to the need for, and the value of, the proposed action.

HUNDLEY : Improvements of nutritional value can sometimes be achieved as side effects. The dried skim milk that is added to nearly all white bread in the USA is used primarily for its ability to improve baking characteristics; cotton seed flour is used for the same reason in biscuits and cakes, and the chief reason for adding carotene to margarine is not because it is a needed vitamin, but because it imparts a nice yellow colour.

Political Factors

SEBRELL : In most countries today, the first aim of the government is to ensure an adequate supply of calories, to avert the intolerable situation of famine and starvation. The second is to maintain an adequate supply of the staple food at a price the people can afford. If the price of the staple rises too much the government may fall. These are politically controlling factors which have to be taken into account in any government action to improve nutrition.

Moreover, in view of the rapid increase in population everywhere, present policy must be directed at increasing produc-

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tion of the staple product to keep pace with demand. The application of the advice of the nutritionist, who sees the need for the increase in production not only of the staples but of foods that are more desirable from the nutritional point of view, introduces an immense complication at the political-economic level which will certainly affect any educational efforts at the village level. There, nothing could be worse than creating a desire for something that ultimately proves to be unattainable.

9

Nutrition Education

A. THE PUBLIC HEALTH APPROACH¹

EDUCATION FOR health is not a set of procedures that can be adopted once and for all. It is a long process, always changing, whereby an individual is continually accepting or rejecting new information, new attitudes and new practices in relation to health. In the past the health educator² sought mainly to provide instruction, now he also seeks to provide the conditions necessary for learning that is willing, and is therefore likely to be successful.

For example, in an industrial area in England, the children chose 'atmospheric pollution' as a special subject for study in the biology class. They met the factory managers, the Medical Officer of Health, and the local pathologist. They took photographs and made film strips of the effect of smoke on the town. In their art classes they illustrated episodes in the life of a housewife fighting the battle against smoke-carried dirt; in their history classes they studied the growth of industrialization, and in their biology classes the effect of smoke on plants. Finally, they

¹The discussion was opened by Dr. Victoria García, Dr. J. Burton and Mr. Field Horine, Jr.

²In the following discussion the term 'health education specialist' refers to someone who has been specially trained in this discipline while 'health educator' refers to doctors, nurses, teachers, agronomists, etc. who carry out health or nutrition education as part of their every-day work.

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approached the Mayor who let them use the Town Hall for a public trial of 'Public Enemy No. 1—Smoke', which drew large crowds, and was greatly enjoyed by all.

In the field of nutrition, the conditions for successful education include

- (a) the recognition that education involves a great deal more than information,
- (b) the formulation of a reasonably accurate 'educational diagnosis' before beginning any health education activities,
- (c) the clear definition of the educational objective in relation to the nutritional improvement desired,
- (d) the adjustment of programmes and practices to local needs and possibilities, and to the individuals concerned, not only as individuals but as members of specific groups,
- (e) the satisfactory solution of the problem of training all categories of workers involved,
- (f) periodic evaluation, by scientific methods, of the health education work and the progress of the programme.

A person can be said to be 'educated' in health when, through practical experiences related to health, he has gained the ability to make sound choices based on accurate information, and exerts his sense of responsibility in the care of his own health and that of the community to which he belongs. A certain intelligence is required, and sufficient confidence to decide what attitude he will adopt, and what action he will take, when faced with certain situations affecting his own or his neighbour's health.

HERNANDEZ : The quality of the personal contact between the people and those who are trying to educate about health seems to be of major importance. Without any specialized training in public health education, much has been accomplished by the doctors and nurses in and around Cuernavaca during the last thirty years. Smallpox vaccination and pre-natal supervision were at first unwelcome. Now it is difficult to keep pace with the demand. Confidence has been

established through the personal contact between the public health personnel and the family. The aim has been to prepare the family, which has always been regarded as the basic unit, to co-operate in the solution of the health problems of its community.

WILSON : When we visited the village families in Tlaltizapan, two of them explained why they were willing to put up with this invasion. They said they were friends of the doctor. Similarly, in our own family research activities in London, we had to find for study, families who were not embarrassingly close to us but who could, through a short chain of personal connections, be provided with a guarantee of our integrity. In addition, we had to earn the right to be trusted.

The Use of Influential Groups

The amorphous public is made up of people who belong, at different times and for different purposes, to different groups—the family, the school, recreation and work groups. The groups provide experiences which mould the growing child and the adult, and which are not always conducive to healthy living. Some apparently unimportant groups may decide vital points of view, for example that ‘milk is a sissy food for boys’ (Klineberg). At present neither parents, schoolmasters, nor industrial leaders possess the knowledge or the attitudes necessary to make the most of their opportunities as potential educators about health. Every different group, in its own way, offers opportunities for health education in its widest sense.

In commercial organizations there are whole departments whose sole business is to watch what is happening in all known areas of competitive interest and activity. Similar vigilance on the part of the public health worker, and attention to the commercial and other groups in the community, is necessary and might, on occasion, change potential enemies into powerful allies (Wilson).

The identification of influential groups in a given situation is part of the ‘educational diagnosis’, and can be carried out accurately only when the members of the public health team know

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their community thoroughly, and understand the whole purpose and planning of the programme.

Working with and through groups rather than individuals is preferable because of the power of the group to influence its members. All groups have their leaders through whom a start may be made, and who will ultimately replace the public health workers as the educational agent. When about one-third of the people involved in any programme have been convinced of its value and have themselves become agents of change, the programme may be considered successful. Another third will slowly follow their neighbours' example, and the rest will remain unconvinced to the end.

The Need for Well-defined Objectives

Everyone who is going to take part in nutrition education must understand clearly the objectives of each stage of the programme. They, and particularly the health education specialist, look to the nutritionist or the leader of the public health team for a clear definition of the nutritional objectives. Without this, the educational efforts cannot be properly planned or directed.

The person responsible for the educational activities should be included in the diagnostic and preliminary planning stages, in order that all the members of the team may be aware of each other's problems and methods of work. Too often health and nutrition programmes are begun, and the health education specialist is consulted only when progress appears to be blocked for some reason or other.

What are the Objectives?

The objectives of nutritional improvement are best considered in several stages.

PLATT : The overall objective is to secure and maintain the health (in its widest sense) of each individual in so far as it can be achieved by good feeding. Even in communities where there is no obvious malnutrition, the constant development of new methods of food processing or crop fertilization and protection may give rise to new nutritional risks.

MEAD : If the nutrition programme involves the total population, the educator's task will include trying to achieve the co-operation and co-ordination of the 'public persuaders'—radio, television, advertising, and the press. The creation of a general climate of opinion and knowledge, favourable to the later accomplishment of the specific nutritional objectives, might well be considered the primary objective. If it is not achieved, the common situation will develop where the educators tell the people what they *ought* to eat, while the advertisers tell them what they *like* to eat.

WILSON : The specific objectives will depend on the accuracy of the diagnosis of the nutritional situation, which, in turn, will depend on the knowledge and imagination of the team that carries out the preliminary investigations. The team, composed of people concerned with health, and so trained that their diagnosis includes evaluation of the existing learning in a community, as well as of the social, agricultural and economic aspects of the total programme, must be able to think creatively. Their diagnosis will indicate where changes in the concept of health and disease are needed and how education might be initiated. The team of health and social diagnosticians is necessary until a generation of public health or nutrition educators, whose perceptions are wide enough to cover the total health field under review, has been trained.

JELLIFFE : There are certain fairly specific practical objectives which are also generally applicable in the field of protein malnutrition in young children, namely

- (a) the introduction of mixed feeding in the second six months of life with special relation to animal and vegetable protein foods,
- (b) the 'neutralization' of certain neo-nutritional habits and customs, such as the early introduction of bottle feeding (and the coincidental falling off of breast feeding) or of refined flours, and of cola and other similar drinks, in child feeding,
- (c) the counter-balancing or circumventing of certain deleterious social conventions (such as the sending of a

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child away to distant relatives) and of certain ideas about the production and treatment of disease.

VELASCO : The common factor among the objectives might be described as an attempt to catalyse the community in order to stimulate an active, dynamic process through which the level of health can be raised in relation to certain scales of values. This process of active transformation, which implies an interest and activity on the part of the public, will permit the community to solve its own problems with its own techniques.

WILSON : There is a difference between the definition of policy, which expresses the philosophy and values behind the programme, and the definition of plans, which are concrete substantive lines of action. If a policy is couched in purely medical terms, it is apt to emerge in predominantly bio-physiological types of plans, and types of activity that are primarily professional.

STOETZEL : The policy then gives the impression that medical values are being imposed in much the same way as the missionaries used to impose their values.

The Principles of Health (or Nutrition) Education

Most public health programmes today have three main problems :

- (a) the individuals concerned, whose background of knowledge and personal reactions are usually unknown, and who generally do not understand the purpose of the programme or the public health worker's aims,
- (b) health problems which are not yet fully understood and need further research,
- (c) technical problems involved in the training of the necessary personnel.

How can health education of the public help to solve at least some of these problems?

One of the most important principles is that any educational venture has to be tailor-made to the local situation. Also (to quote Dr. Brock Chisholm) 'Health is not something you can do to

people, they have got to do it to themselves.' People need to take, in some way or another, an active and interested part in whatever is being done to improve their health.

Many examples of present day health education whereby people have learned by 'doing something about it' are to be found, especially in the accounts of successful community health and welfare programmes. Most of them mention the people's lack of awareness of their nutritional or other deficiencies. All confirm the wisdom of a slow beginning with much discussion and explanation, and the benefits (in terms of sustained effort and co-operation) of starting with something in which the people themselves are interested or with some not too unfamiliar activity, as the following example shows.

An internationally assisted school feeding scheme, initiated by an FAO nutritionist, Miss Dean Low, in a rural area in Iran, which began with full discussion between the parents, teachers and the nutritionist developed into a real community enterprise. The parents grew vegetables specified by the nutritionist and baked the loaves needed, and sold them to the local school. Planned meals were cooked by local women taught on the spot; the senior girl pupils helped to prepare the food, and the mothers took turns, once a week, at helping to serve the meal. The children enjoyed the food, and demanded 'school food' at home. They gained weight and their health improved. The farmers, glad of a ready market for their produce, offered to grow more of the food required for the following year. In one way or another the whole community benefited, and became 'educated' in nutrition.¹

The chance to make new or to meet old friends, or to learn a useful and profitable handicraft has proved an incentive to attend 'Mothers' Clubs' in England (Burton), Calcutta (Jelliffe) and Brazil (Alvim). Judging by their increasing membership, these clubs provide a welcome centre for the discussion of health matters, and for learning new ways. In helping the people to achieve something they themselves want, they fulfil one of the basic principles of successful education.

¹Postscript by Dr. J. Burton.

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The Need for Educational Diagnosis

When the nutritional problems and possible remedies are known, the first thing to do is to work out the educational diagnosis. It is easier to see what needs to be done, how it can be done and who needs to do it, if the nutritional problem can be broken down into its various component and related parts. A suitable scheme of division might be as follows :

1. Soil, climate, water supplies,
2. Land tenure,
3. Food politics : national or local food policy, taxation, subsidy,
4. Food production and storage,
5. Food utilization : home consumption or sale,
6. Food distribution and marketing,
7. Food processing,
8. Medical and public health nutrition problems,
9. Food habits,
10. Social and cultural factors,
11. Educational and public relations problems : economics of nutrition education.

Items 1, 2, 3, 4 and 5 are really problems of agriculture and general politics. Item 6 is a commercial issue or a political one, item 7 a technical problem. It is only in items 8, 9, 10 and 11 that the problems generally considered to be those of nutrition education are found, but this does not mean that the educator can ignore the others. The education planning stage is based on making a diagnosis progressively and deliberately, with all the items in mind, and deciding who is the best person and what is the best method to deal with each separate aspect. For example, political matters will probably be dealt with by the chief of the public health or nutrition service. Other questions within the field of the agriculture extension worker, the home economist and the veterinary staff will be matters of consultation between the health education people and those specialists, and a division of the educational responsibilities will have to be thought out. Frequently, however, separate 'specialists' are not available and the person

responsible for the educational activities will have to cover the ground.

The last item, the problems of education and public relations, needs a more refined breakdown. The diagnosis again must be based on the collection of information regarding such matters as

- (a) the degree of recognition among the population of the deficiencies or benefits of food, and of disease caused by malnutrition,
- (b) the existing knowledge and beliefs regarding food, and especially any foods which are admired, or considered to have certain properties,
- (c) the attitudes of the people, whether they are optimistic or pessimistic about the situation generally, whether they think that nutrition is important, and whose nutrition they think most important—the wage earner's, the child's or the grandmother's,
- (d) the behaviour of the people, what they actually eat, the economics of food consumption, how the family budget is spent, and so on,
- (e) the social structure in relation to food. Who eats what, with whom, and when, and who influences the family meal pattern in a community—the shopkeeper, or the doctor, or other people; who does the shopping, father or mother,
- (f) the communication of ideas, the patterns of influence within the community—mass communication, newspapers, radio, etc., and the neighbour-to-neighbour contact. The recognition of the leaders of opinion, the 'innovators' and 'influentials' (see p. 74 and Appendix 1, p. 196).

The breakdown is, of course, only an artificial device to ensure that each aspect of the total nutritional problem will be considered. In reality there is a great deal of inter-relation between the different sections.

The health educator or health education specialist should be aware of the help other specialists can give him and be prepared to seek and use that help. He will rarely have an anthropologist

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or sociologist to consult and he has, therefore, to be trained to know what he can and cannot do in his particular sphere. As the general practitioner in the application of the social sciences to public health he should usually be able to obtain a good general impression of the kinds of information that have been indicated.

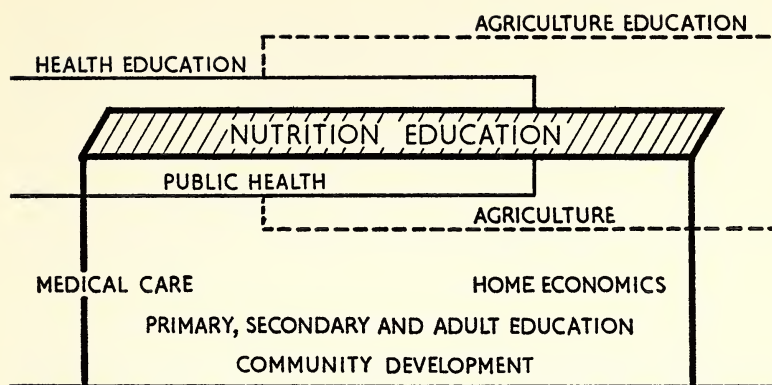
KLINEBERG : This concept of the health educator as a 'general practitioner', who has access to specialist services for diagnostic and therapeutic purposes in the social field, is important in training, as well as in the formulation and in the evaluation of programmes, because of the special consequences that arise from this particular definition of his role.

AUTRET : The concept is certainly not a familiar one, accepted everywhere. Nutrition education is the responsibility of many people in various disciplines, and cannot be assigned to one department, or labelled 'health education'. It calls for joint action by public health and medical personnel, public health and non-medical nutritionists, dieticians, agronomists, agriculture extension workers, home economists, school teachers, community development workers, social workers and others. Certain aspects belong entirely in the field of agronomics, and the agronomist would be very surprised to hear himself described as a 'health educator', even if he realizes that by teaching better agricultural practices he is contributing indirectly to better health. Other aspects concern technical matters such as the storage or processing of foods in the home or community, still others economic problems, for example, the undue or unwise expenditure on certain types of food. The separate and overlapping areas of nutrition education are shown in the diagram opposite.

SCRIMSHAW : In practice, nutrition education is part of health education for all medical and health workers. In schools it may be part of health education, or of instruction in agriculture, domestic science or home economics.

Wider Implications of Nutrition Education

MEAD : In certain countries a new situation has developed.



Though negligible from the standpoint of world malnutrition and ill-health, it is nevertheless significant as a background for the thinking of those who are dealing with the under-privileged areas of the world. In countries like the USA, the availability of food, in terms of supplies and of increased buying power, has created a new problem for nutrition education. The aim is no longer to obtain enough of the right foods, but rather to select, from the unwonted abundance, a diet which is not over-balanced with single classes of nutrients like sugar or animal fat. Today the teaching of children, the buying habits of adults, and the habits of food preparation and food serving are carry-overs from an era when food was less nourishing and less easily obtainable, and individuals needed more calories for strenuous activity. A different kind of imbalance now prevails, in which the majority of the people have to fight against eating too much food or eating foods in the wrong proportions. 'Dieting' assumes the centre of the stage, with profound implications for the cultures in which most present-day nutritionists grew up, and also for the distribution of funds for research, education and relief of malnutrition around the world.

Again, there appears to be a relationship between the conditions of plenty existing today in some industrialized countries, and contemporary education about infant feeding in these

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countries. The general problem is how to organize the education of children and the behaviour of the adults who determine the dietary pattern, so that individuals will focus, not upon quantity of food, but upon appropriate combinations. The present approach of adapting feeding schedules, breast or bottle, to the physiological rhythm of each infant, so that in effect, he self-selects the amount and timing of his nourishment, provides a type of early experience which is a suitable precursor of learning for a country where food supplies are diverse and superabundant.

In certain countries food is used as a principal means of disciplining children. They learn that if they eat their vegetables they get their dessert, and that if they don't eat their vegetables they don't get their dessert. Thus, they learn two things—that vegetables are something nobody would eat unless bribed, and that pain before pleasure is virtue (and conversely, we can presume, that pain after pleasure is vice); a primarily moral lesson!

Nutrition education must be combined with the whole educational ideology in any country. How children are going to learn in school, how mothers are going to bring up their children, and what are considered the best child welfare and child rearing practices, are going to affect nutrition education. This education may actually run counter to some other trend in society, and so be ineffective, because the two nullify each other. To avoid the nullity some provision for a continual re-assessment of the values and procedures used in nutrition education must be made.

Postscript. Dental care for school children and dental health education are carried out extensively in the Scandinavian countries, and yet the children daily spend a considerable sum of money on sweets, and the caries rate among children is extremely high. Nutrition education, which forms a large element of the dental health education, fails because it is undermined by other practices. School children receive free dental treatment during their school years, but not before. Parents are thus conditioned to think that pre-school dental care is a luxury rather than a

necessity. The dental clinic is part of the school building, and the acceptance of dental care is encouraged by rewards for good behaviour in the chair. The children thus learn to accept dental caries and dental care as a normal part of school life, and to believe that being a good patient is more praiseworthy than having good teeth. As elsewhere, the use of cariogenic foods (sweets and cakes) as rewards, bribes or festive foods is begun early in the child's life—thus moulding his taste and giving a high prestige value to these foods.¹

Educational Programmes and Practice

In the past, health education in the field of nutrition or any other aspect of public health has often been immensely boring, full of exhortations and admonitions (Mead). In the last twenty years, however, increased understanding of how people learn, especially where learning means a change in actual behaviour, and study of the effectiveness of different educational approaches and methods, have caused radical changes in the health educator's approach.

What one does, and how one does it, are equally important, for health education is the sum total of experiences that affect a person's beliefs, attitudes and practices. Frequently a change in the last two, in practices and attitudes, precedes a change in the beliefs.

An indirect approach is often the only one possible where people do not recognize the connection between their ill health and its true cause.

'Few people realized they were sick as most of them did not know what it was to be well . . . Furthermore, since most of them were ignorant of the causes of the diseases and attributed sickness variously to the alternations of cold or heat, to the contrast of cold and warm foods ingested at the wrong moment, or to supernatural forces—among them "the will of God" and the "evil eye"—they did not see the need or value of changing their pattern of sanitary life.'²

¹*Editorial postscript*: see Burgess, A., and Burton, J. (1954) Control of dental caries: beginning at the beginning. *Lancet*, I, p. 772.

²de Hollanda, H. (1959) Victory over apathy. *Int. J. Hlth. Educ.*, Vol. 2, p. 142, (quoted in background paper No. 7).

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At the outset, in this poverty-stricken, malnourished, apathetic community, heavily infected with schistosomiasis, the people felt that their greatest needs were electricity and transportation to the town, medical services, a water supply, a shopping centre and opportunities for work, in that order. The majority thought that only 'government' could take the necessary initiative to get something done. Beginning with six couples, fortnightly discussions centred around the needs expressed. Education about health matters was slowly introduced, and in three years much had been accomplished, including the organizing of women's clubs for the teaching of home economics, and a food co-operative.¹

The Planning of Nutrition Education

The chief points to be considered in the planning of nutrition education concern the choice of educators, when and where the education should be concentrated, and the means to be employed. Any well-rounded programme must be based on detailed answers to these questions, defining responsibility and priorities, and providing some facilities for in-service training of personnel at regular intervals, as well as for evaluating the progress of the work at every stage.

Who shall be the Educators?

Nutrition education should not consist merely of the efforts of a few specialists to bring new knowledge to the community, while everybody else does his own job. For better or for worse, health education is part of the daily activities of every person who is concerned with health problems. In planning a nutrition education programme, therefore, the part which several different categories of people can play must be considered.

The first to come to mind are, naturally, the medical personnel—public health nurses, hospital nurses, midwives, sanitarians, and physicians and their auxiliaries. The educational opportunities of the hospital nurse could be used much more fully than they are at present.

A L V I M : In the developing countries the public health nurse's

¹de Hollanda, H., vide supra.

main function is to develop educational activities, to teach care, and only occasionally to give actual care. Nursing means teaching, whether in public health activities or in hospital.

WILSON: In a research project in London which was in effect a four-year programme of extensive collaboration involving considerable effort on the part of a number of families, we discovered that what looked like effective channels of access for research purposes could very easily be used for educational purposes. The access was not easy to determine in advance by the formal, expected roles of those concerned. For example, the general practitioner proved to be absolutely useless. Although in his own eyes he would describe himself as being concerned in a vague sort of way with the family as a whole, in fact, different members of the family often had different general practitioners for their own particular reasons. It appeared that in the eyes of their patients, the majority of the general practitioners were seen in an almost veterinary light, and the patients would not dream of discussing any personal or social questions with them.

Another group includes the agriculture extension agent,¹ who traditionally has done a great deal of nutrition and agricultural education, the veterinarian, the home economist and the community development worker. In the past the veterinarian has not been fully utilized as an educator.

The formal and informal educators—school teachers, religious leaders, and leaders of informal groups—depending on the circumstances and the particular type of problem that is being dealt with by the community, make up another influential group. It is

¹The 'agriculture extension agent' is someone who 'extends' or carries information from a central source, a research or experimental station, to the people who are going to use this information on their farms (Pino). In the USA this discipline includes agriculture, mechanical arts and home economics, with specialists in all these fields. The agricultural agent's functions are similar to those of the public health nurse, who is a generalist. The specialists in the agriculture extension service usually function at headquarters and are consultants to these general agents. Their counterpart in health would be the health education specialist or nutritionist who acts as a consultant to the public health nurse (Huenemann). In many African territories he is called an 'agricultural demonstrator' or 'agricultural assistant' and works at the village level (Platt). FAO uses the English term 'agriculture extension' and the French 'vulgarisation agricole' (Autret).

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hardly necessary to add that the co-operation of the parents and grandparents must be gained if the nutrition programme is going to be effective. They are, of course, the primary health educators.

Where Can Nutrition Education be Carried Out?

This question cannot be fully dealt with apart from the actual problem and the programme being planned. Some possibilities are

- (a) Ministries of education, public health or agriculture,
- (b) Civic and professional associations, adult education or religious centres,
- (c) Medical-care or health-promotion institutions, health centres, hospitals or out-patient clinics,
- (d) Places where food supplements are being issued (schools, health centres, etc.),
- (e) Co-operatives, whether consumer or producer groups, markets,
- (f) Commercial firms,¹
- (g) Nutrition councils,
- (h) Schools and colleges, youth clubs, athletic associations, summer camps, etc.

Just as the parents are the first educators, so is the home the natural centre for many educational activities, and all who have access to the home should be trained to utilize their educational opportunities to the utmost. In many countries, however, the great increase of specialized auxiliary workers, all with 'access to the home' and some interest in the family's welfare, is a matter of concern and debate (Burton, Teply, Alvim, Velasco). The problem is fully recognized, but the best method of integrating the various efforts can only be worked out locally. One method is to provide common elements in training, often derived from the social sciences (Wilson).

¹The co-operation of commercial firms has occasionally proved extremely valuable. For example, in England certain advertisements for powdered milk for babies seemed to suggest that women could not feed their babies and that this particular milk was the only possible substitute. When the implications were explained to the advertising manager, and it was pointed out that this approach would probably not be welcomed by the medical profession, he agreed to have the copy re-written and everyone was content (Burton).

Educating the Educators

POORWO : In Indonesia nutrition education is vitally important, and a system has been devised whereby the teaching of the few highly skilled nutritionists is passed on through all levels of society from the government to the village.

Three groups at different levels have to be educated about nutrition. The first includes Parliament, the cabinet, the planning boards and the factories. They are approached by physicians who are nutritionists. The second group consists of teachers, para-medical personnel (nurses, midwives, hospital aids) and agricultural personnel, homemakers and local government officials. These receive in-service training from nutritionists, and themselves train the third group, that includes the people who attend the health centres, housewives, pupils in primary schools, and so on.

DEN HARTOG : In Holland, nutrition education is carried out indirectly from central institutes where physicians, nurses, social workers, dieticians and teachers learn about the problems of food consumption and nutrition in the different population groups. The problems are discussed along with the different objectives for the nutrition education programme which, it is hoped, they will carry out as part of their daily work. The trained staff of the institutes do not approach the population groups directly, except on request. The institutes also prepare and provide educational material, specially designed for each group and each purpose.

The Evaluation of Results

The effect of health education as applied to nutrition requires a great deal of research. Many disciplines are involved, and agreement has not yet been reached as to what is actually meant by the term 'evaluation of nutrition education'. Is the work of the educator to be evaluated quantitatively or qualitatively? What is to be evaluated—different procedures, individual changes, or the long-term effect of the total programme? Progress will be made and experience gained when those who plan the programme also decide, at the time of planning, the stages by which they hope to

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reach their objectives. The kind of measurements or 'indices' of progress which will be applicable and informative at each stage, and in each aspect of the programme, must also be defined. Regular stage-by-stage reviews allow any necessary adjustments to be made to the programme before too much time, money and effort have been wasted.

B. THE APPROACH THROUGH AGRICULTURE¹

Until recently in Mexico we have been concerned primarily with developing background research on the factors that limit the production of maize, beans and meat, the three staples. Now that the Republic is self-sufficient in these foods, more attention has been given to other important crops, to forage-production relating indirectly to milk production, and to aspects of animal husbandry.

The basic factors that influence crop production have to be brought into focus by experiment, and this calls for the training of a whole new generation of young scientists. Once the basic factors are known, it is surprising how fast the knowledge spreads. In the beginning in rural areas great resistance to change is usual and nothing can be done merely by talking, but if you manage to persuade a leader in the community to let you set up simple, convincing demonstrations on his farm, and if you repeat the same process in various communities, the result is explosive.

There should be an extension service that will carry the results of research to the farmers, but building up an extension service is a slow process, and here in Mexico we have worked in this other way, and it has been successful.

Sometimes, I am afraid, we have been accused of using tricks. We first told the farmers about the value of improved seeds, but did not give them the seed until they had fertilized the ground, and prepared it properly. The fertilizer cost more money than the seed, so it represented an investment, and the farmers were very reluctant to co-operate until they could actually see the great benefits that came from fertilization.

With even a small success, however, the people become recep-

¹The discussion was opened by Dr. Norman Borlaug and Dr. John Pino.

tive. Once you introduce an improvement in agricultural practice, you open the door to many other things, to better ways of handling the family and the home, and also to improvements in health. Particularly in the remote areas, people will accept innovations that come by way of agriculture.

We are now trying to divert part of the acreage to alfalfa for the dairy industry, or to grain crops which are useful in the production of meat.

We are also trying to help the individual family to improve the quality of the food grown and consumed. One problem was how to ensure the acceptance of new varieties of foods such as beans or corn.

We have 'field days' on which the farmers come and see for themselves what varieties have provided the best results under particular conditions, and many go back and plant a row of the new seed to see how it grows on their own land.

In our recent programmes we have been concerned with animal production. Attempts have been made to increase, for example, egg production in a small village, in the hope that the nutrition of the village will improve. The people, however, do not eat the chickens or the eggs nor, incidentally, do they drink the milk from their cows. These products are sold, even though children in that village may be suffering from malnutrition. This is a problem of economics, and experience elsewhere has shown that it disappears with time and economic progress (Autret).

'Rural demonstration agents', young women who have entrance to the homes which the 'technical county agent' does not have, work directly with the families, and seem to have been successful. They are trained in 'production courses'—how to raise and vaccinate chickens or how to produce better rabbits. Some of their work influences the health of the community. People see that chickens have to be vaccinated in order to remain healthy, and begin to ask themselves if perhaps they also should not be vaccinated.

Demonstrations showing how to make better use of foods such as vegetables, which many villages can produce, are also given. At present the women do not know what to do with such crops.

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Great care must be taken not to try to introduce new methods, or types of seeds or livestock which require, for their successful use, an understanding of scientific principles not yet within the scope of the village farmer. Hybrid corn, for example, may do very well the first year, and then, for reasons the trained scientist understands but which are difficult to explain to the farmer, may fail completely the second year. New varieties of chicken may produce more eggs than the indigenous type, but generally do not have the resistance to local conditions necessary for survival.

There are two great stumbling blocks for most theoretically sound agricultural improvement schemes.

The first is the limited earning power of the individual on most small farms. This is the basic problem in a good part of the world. In our eagerness to help we sometimes forget about the small plot of land that most peasants live on. There is very little chance of lifting these people rapidly, and if you over-simplify the problem you probably delay the improvement.

The second is the lack of organization, or lack of stability of organization, at national and local levels in many countries. A group of young scientists who have been sent for training in health, or agriculture extension, come back and try to put their knowledge into effect. If the local organization is not stable enough to provide them with the basic necessities for their work—housing, transportation, and so on—they will be unable to do their job, and will leave. They may do very well individually in other spheres, but they are lost to the programme and to the community they hoped to serve.

The introduction of unfamiliar crops, through the women demonstrators or the local agronomist, has been much more difficult than improving the production of familiar foods. The introduction of unfamiliar vegetable crops evokes the greatest resistance. Problems of preparing and cooking the new foods and conserving the seasonal varieties arise, but a little progress has been made. With the soya bean which has recently been introduced there is, however, no problem, and it will soon become a staple.

The history of the potato in Mexico illustrates how complicated the question of food-use can be. The potato is indigenous to the

Americas but it has never been a staple food in Mexico as it is in Peru. The long dry season and problems of storage were partly to blame, as well as potato disease which became endemic. The development of blight-resistant types has, however, made it possible to grow potatoes during the rainy season, without spraying, and it is now a potential basic crop.

Resistance to sprouting was also achieved, in some varieties, at the same time as blight resistance, and these varieties can now be stored without refrigeration from October to June.

BURTON : In Ireland the situation was different and the basic factors favourable to the introduction of this new food crop were

- (a) the suitability of climate and soil,
- (b) an existing system of land tenure which suited crop economy and cultivation,
- (c) a method of cultivation which was easy, and fitted the implements already in use,
- (d) ease of storage and protection from theft, and from destruction by beasts or climate,
- (e) the promise of greater security that the crop offered to the insecure farmer,
- (f) the suitability for existing customs of cooking, without any demands for more fuel or new utensils,
- (g) cheapness, to grow or to buy, in comparison with the cost of the foods it replaced.

Other factors which seem to have been important are the reputation or prestige value of the food (which hastened its adoption in certain groups or classes while retarding it in others), the political situation of the moment and the sustained advocacy and example of leading authorities in agriculture, medicine, science and economics.

AUTRET : The national plan, an essential for balanced agricultural and nutritional improvement, is made up of a number of regional plans that take into account local ecology, manpower, skills and preferences. In countries where transport and communications are difficult and where 85% of the people pro-

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duce their own food, nutrition education must begin through agriculture, with the agricultural agent helping the people to increase local food production and especially the production of nutritionally valuable foods already there. In these efforts to improve the family diet the women—the mothers and grandmothers—must be included, just as in other circumstances, education of the fathers must not be forgotten when the mothers are being introduced to new food habits.

C. LESSONS FROM THE COMMERCIAL WORLD¹

It might be useful to consider the attitude of the business world to this problem of changing people's habits, through, for example, efforts to market a new food product.

A recent introductory textbook² described 'marketing' as concerned with the integral management of the purchase of raw materials, of production and production costs, of distribution by the linked processes of selling, advertising and merchandizing, of social research to produce an effectual foundation for organized planning, and of attempts to measure the overall results of the operations. The integrated management of this wide range of activities is recognized to be a matter of very considerable importance in commercial practice. The stress laid on this integration, as against the relative lack of integration in many types of community-change projects, immediately strikes the visitor from the commercial world.

The men who become 'general managers' of these complex activities in commercial marketing will certainly have been at one time functional managers or specialists of one kind or another. The particular managerial skill required, however, is that of fostering and integrating the work of a number of units of different kinds, and of a considerable range of functional managers and specialists. The 'general managers' cannot as a rule be described as the exact equivalent of 'administrators' in governmental organization, mainly because commercial and governmental organiza-

¹Contributed by Dr. A. T. M. Wilson. See also p. 147.

²McIver, C. (1959) *Marketing*. Business Publications Ltd., London.

tions differ in objectives, and hence in structure and procedures. A 'marketing manager' needs to be an active leader of his immediate subordinates as well as a regulator and co-ordinator of their activities, and this particular combination of intellectual capacity and the ability for active personal leadership commands high posts in industry. The personality requirements for the team leader in a community project might with advantage correspond to some of those described for a general manager in commercial marketing.

10

Methods of Studying Food Habits¹

Market Research

THERE ARE various methods by which the whole subject of the social significance of food habits might be studied. One involves using something which has already been mentioned, the by-products of market research. The information has been gathered for the benefit of the companies paying for it, but (by private arrangement with the agency and the client) it has sometimes been used for scientific purposes. For the cost of a careful analysis, much has then been learned about various aspects of food habits. One company² has permitted the results of two surveys to be presented here.³ As well as showing how French infants are fed, the surveys also showed the sources of the nutrition education of the mothers, and confirmed that those mothers who are most in need of advice on infant feeding, seek it least frequently.

Other reports show clearly the difference in eating habits between men and women in France. The eating habits of women appear to stand halfway between children's habits and the habits of adult men, in a society dominated by the men. A study of the eating habits of women whose social status approaches that of men

¹The discussion was opened by Dr. J. Stoetzel.

²La Société du Lait Guigoz, Vuadens, Switzerland.

³Background Paper No. 6.

might show that changes in food habits are linked, as cause or effect, with changes in social function and position.

Surveys of public opinion in the realm of food reveal many other facets of the minds of consumers; the extent and validity of their knowledge, their concerns, their personal experiences in relation to food, their opinions and prejudices, their resistance to change, and their attitudes to new products, or to products whose consumption is increasing.

Individual habits are certainly associated, at least in part, with sociological factors. Consumers are found on the whole to be more open to experiment if they are young, if they live in big cities, and if they are well off.

The manner in which the person interviewed thinks about his food, his attitude to it, and his comments on it tend to betray the effects of psychological factors such as identification, projection and rationalization.

In France, research on the consumption of rice, and on the consumer's attitude towards this food, showed that those who eat rice more frequently think that its consumption is rising, and state more often that they like it—with one notable exception. People in the poorest socio-economic groups consume by far the most rice, but do not like it, and cannot imagine others being satisfied with it. The group typifies the frustrated unhappy consumer.

Some market research has been carried out in parts of Africa, India and Iran. The actual gathering of information is expensive, but commercial firms might be willing to co-operate in research into food habits in countries where research facilities do not now exist.

HUNDLEY : In our quest for information on food habits in the USA the possibility has been explored of using some of the data collected by market research organizations. For several reasons, however, the actual amount of information found useful for nutritional purposes was quite limited. Nevertheless, the machinery and methods of these agencies could possibly be used for nutritional research at far less cost than that of a new start from scratch. Many agencies use highly-developed

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apparatus for electronic data processing, analyzing and coding which, for a reasonable cost, can be made to provide the information needed.

MEAD : It is important to discriminate in the use of the market research survey method. During the war it was possible to compare the situations where high-level market research paid and where it did not. The meal pattern of a country can be found out cheaply, easily and quickly by the recognized anthropological techniques. In many emergency situations anthropological methods will also be more suitable. However, if it is necessary to find out, on a country-wide basis, where changes occur and why, which people and which classes at which moment are making changes in their food habits, then the market research method has to be used.

SAI : The data, rather than the commercial interpretations of the results of market research, are the more reliable source of information—especially when the purpose for which the research was carried out is not known.

Another method is the survey specially undertaken for scientific or practical purposes. Three types of survey can be carried out, one dealing with the concrete nutritional, environmental, and economic factors: the second, 'factor analysis' dealing with the attitudes involved, and the third, 'motivational studies' to discover the more abstract factors influencing consumption.

Hitherto, qualitative descriptions of diets have been based mainly on ethnological surveys—resulting in broad generalizations with little exactitude of detail. Quantitative estimates have relied on governmental and even fiscal statistics relating to production, exports and imports, and the established averages conceal variations which can be important.

The Fact-finding Survey

An accurate description of the diet of the population of any particular country is the first necessity, most satisfactorily met by surveys based on carefully selected samples. In two nation-wide surveys on the actual food consumption of the population in France, a questionnaire listing everything that each person inter-

viewed had eaten or drunk during the past 24 hours, and models of different foods, and containers by means of which he could accurately describe quantity, were used. The results were carefully related to various sociological and demographic factors, and to the days of the week and the periods of the month, and to events such as fairs, pay-days and holidays. Through the periodic repetition of the surveys, at ten-year intervals, the meaning and direction of changes in eating habits could be predicted. Studies of this kind are, however, difficult and costly.

Precise information on a number of inter-related facts, such as daily menus, variations during the week, month or year, analyzed by the different sociological categories of the persons involved, can be achieved relatively easily, provided that the period of time surveyed is extremely restricted. Otherwise there are a number of pitfalls.

Ideally, only the previous meal, or the meal in progress during the interview, should be the object of enquiry. When someone is asked about his personal habits over a very short time, it is easy for him to give information without feeling he is being indiscreet, or that he is 'giving himself away'. He feels that this short period is not really representative of his personality. If he is asked about his family budget, he may hesitate to give a detailed account of his expenses during the last two years or two months, but if he is asked what he has spent that day, or during the past hour, he will say, 'Well, I must warn you, this is not representative, but I have spent so and so.'

Attitude Surveys

Attitude surveys are usually more complicated, because no one can describe his attitude towards food or beverages completely and accurately, for the very good reason that he just does not know what it is. If attempts are being made to change food habits, it is most important to know why certain foods are preferred (Kelly, Hundley). It is, however, rarely any use to ask why they are preferred. There seem to be two ways of getting at the attitudes or influential factors in food preferences. One is factor analysis and the other is motivational research.

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Factor analysis has nothing to do with what people believe to be at the root of their choice. The method depends on presenting a person with a number of positive and negative choices, which he goes through in order of preference. If food is the subject of investigation he will be asked to indicate the food he likes most, and the food he dislikes most, and will repeat this dual choice until he has exhausted the list.

In the end, all the foods are ranked in order of preference. When the process has been repeated with many persons, a fairly complicated mathematical analysis can be made which will show, unequivocally and objectively, the reasons for the choices and even the relative importance of the reasons.

In one investigation of attitudes towards various beverages, it was found that there were three main factors which operated in about 90 per cent of the subjects. The first was a preference for non-alcoholic or alcoholic drinks, the second was cost, either cheapness or expensiveness, and the third, certain local or provincial influences. Cognac, for example, carried the same rating, favourable or unfavourable, nearly everywhere in France, but the rating of 'le Marc' varied to a very large extent between the provinces.

The usefulness of this method lies not so much in deciding the preference for such and such a food or drink, which may be easily done by other means (Autret), but in predicting how a certain person who chooses, for example, 'le Marc' will make his second or third choice—and therefore what substitute he will be willing to accept if necessary.

Useful as the method is, it still does not answer the question why people like certain foods and not others. For this purpose, motivational studies are necessary.

Motivational studies are carried out along very different lines. The essence of the method is a lengthy conversation around the main topic, with the interviewer asking no direct questions, but always encouraging the person to express his personal views about the subject under study. The tape recordings of the conversation can be analyzed afterwards.

The technique resembles an old form of psycho-analytical

interview, because it looks for indirect indicators. You have a question, you probe, you ask other questions, you look for what underlies the answers you get. The term 'depth interview' is sometimes used for this particular phenomenon (Klineberg).

You learn from every interview, and can direct subsequent discussions so as to obtain more of the kind of information you want. It is not a question of asking why, but of letting the person express himself as freely as possible. By this means, you get the 'product-image' and at the same time, the image of the ego and relationship between the two. The method has been used very widely during the last few years, not always by scientific persons, and has therefore fallen into some disrepute. Handled by serious psychologists, however, it could be most useful in a number of extremely difficult situations.

Field Observation

JELLIFFE : Field observation is another method of obtaining information on food habits, one which medical people, working in nutrition with limited funds and resources, can use. At present the method probably yields only approximate results, but with increasing experience and the development of better defined techniques, more accuracy should be possible.

The study in the village of Tlaltizapan (see p. 42) demonstrated a multidisciplinary attempt to collect all the data relevant to ideas about food, and particularly those relevant to malnutrition in early childhood. There, the basic problem—how to make any such study worth while in the eyes of the people concerned—has been overcome by providing medical treatment for the children, something the people wanted. Much time has also had to be spent winning the confidence of the people in the good faith of the members of the team. In these circumstances, the techniques of observation can be expected to give reasonably reliable results.

As an amateur concerned with cultural patterns, I have found that there are three main ways of obtaining information. First, to search the medical, paediatric, socio-economic and anthropological literature and to become familiar with proverbs

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and sayings. Second, to question educated people, although they may prove to be extremely limited in their knowledge of their fellow men. We can sometimes obtain valuable information by listening to conversations that we have stimulated between our medical students and groups of women in Maternal and Child Health Centres. Of course, an anthropologist who has been living with people in the field is the best source of information, although at first he may find some difficulty in satisfying our particular needs. Thirdly, there are observations that we make ourselves in the villages, watching, for instance, the way in which children are breast fed or trying the experiment of offering some food to the children. I should like to know how far we can trust our observations, and our interpretations of what we observe, and how we could improve these amateur efforts.

MEAD : The word 'amateur' should not be applied at all to the health, nutrition or agricultural worker who has a knowledge of anthropological principles and who is using technical material that has been carefully prepared for his particular purpose.

BURTON : An excellent introduction to social anthropology for health workers has been written by Dr. Kelly.¹

DEAN : In Uganda, we often find that women are uncertain of the extent to which they may divulge information especially about the economic circumstances of the family. Sometimes for instance, they do not know the amount of money obtained by the sale of crops. There is the constant desire to please the questioner which leads to giving an answer that they think will please, irrespective as to whether it is true or not. Some answers are probably given in the hope that if they are of the right kind they will end the questioning. Some answers are withheld, because there is the idea that information is not asked for unless the person who receives it is expecting to make use of it against the informant.

¹Kelly, I. (1960) *La Antropología, la Cultura y la Salud Pública*. Ministerio de Salud Pública y Asistencia Social del Perú, Servicio Co-operativo Interamericano de Salud Pública de Bolivia.

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The enumeration of children provides an example of one of the most acute difficulties. The word for brother is used not only for a sibling, with the same mother and the same father as another child, but also for any relation that we might call a cousin or second cousin. A father, if asked about his children, will normally mention only those who happen to be present. Polygamy is usual, but the families by different women are often kept separate. A mother will not usually mention children she has had by another man although her present husband may know all about those children. Dead children are not usually mentioned because it is unlucky to speak of them. Finally, in communities that do not live by the calendar as we do, there is undoubtedly a tendency towards the blurring of distant events that may extend even to the forgetting of a miscarriage, or a dead child.

G Y Ö R G Y : In Jamaica we could not get the information we needed about the use of bush tea until we could introduce auxiliary nurses from the lower social classes into the homes. Should the person collecting information be someone of the same racial extraction as the people who are being surveyed?

D E A N : Ideally the information should be collected by a native of the country. We compromise by having in our team an elderly African gentleman who worked for a number of years collecting information of an anthropological nature for the East African Institute of Social Research. He belongs to one of the highly respected local families, and appears to be readily accepted at all levels of society. He is accompanied by one of our medically-qualified people, or by a nutritionist, who has had some years' experience of the country. However, we regard as suspect any information that cannot be verified by our own observation or experience.

One final point. The variations in the stories we are told are themselves important. We collect the variations because we want to know why they occur: it seems important to know why we should be given information which is obviously untrue.

M E A D : Information supplied retrospectively is always suspect. I would expect to have to live in a village for at least six months,

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learning all the ins-and-outs of the social organization and the ways in which things are falsified or altered, before I could get any exact information about how many children people have and whose children they were.

The combination of interview and observation that has been described may be valuable, especially if the mother is interrogated on the basis of what has actually been observed. Photographs are often a great help.

Although much information can be obtained without offence, it may sometimes be necessary to sacrifice the chances of future *rapport* by insisting on the answers to difficult questions. For instance, in the study of the new disease *kuru* in the interior of New Guinea it was absolutely essential to know whether the disease was hereditary. Investigators had to know who slept with whom, when, and the technique had to be direct and sometimes bullying.

G Ó M E Z : In Tlaltizapan we had to spend eighteen months, not merely six, in making an approach to the population. When we asked such questions as 'How many people live here?', 'What do you eat?', they refused to answer. We found we must proceed first by observing the children, then by observing the whole family. When we were trusted fully, we had to be willing to advise the whole family.

B U R T O N : If you do not need precise information much can be obtained from indirect questioning, such as by asking what other people do in the village in a certain situation, or asking a mother how other people feed their children. Most communities have 'contact' people who consider themselves superior to others and like to meet an outsider, and such people are often prepared to answer questions about villagers whom they know intimately. Such 'contact' people may even in some circumstances be a good source of exact information.

C R A V I O T O : I agree that the investigator must live in the community in order to collect reliable information, but a difficulty sometimes arises when he acquires the problems and emotions of the families as his own. His information may then be distorted.

KLINEBERG : It is necessary not merely to know the culture of a community in general, but to know the specific group in which the work is going to be done, before it is possible to decide finally on the techniques of obtaining information.

GARCÍA : The interpretation of the findings of community studies seems to need considerable care. The Institute of Sociology in Chile has recently carried out a study, with the Health Education students of the School of Public Health, on the use of the skim milk powder which is distributed free from the Health Centres to all pregnant and lactating women, and to school children. It was found that 48 per cent of the women were using the milk properly, as a supplement; of the rest about 20 per cent were using the milk in a diluted form, and giving some to other members of the family, while about 4 per cent were selling the milk to buy tea, which is highly valued as a 'good food' and a stimulant.

The interesting thing is that the paediatricians are blaming the issue of skim milk powder for the flattening growth curve which occurs in the children in the first year of life, and insisting that full cream milk should be issued in future.

For budgetary and other reasons there seems to be an urgent need for further careful studies of the total nutritional picture, taking into account the economic and social conditions under which the families live, and particularly the standards of hygiene which affect the preparation of the milk in the home.

II

The Role of the Social Scientist in Nutrition Programmes

A. GENERAL PROBLEMS OF MULTI-DISCIPLINARY TEAM WORK¹

THE POSITION of the social scientists in the academic world of learning and research varies greatly in different countries. There can be very few universities in which, as in Harvard, a considerable proportion of all students spend some time in the multi-disciplinary Department of Social Relations. This at least provides some experience of what sociologists, psychologists and anthropologists are like and are concerned with. This kind of opportunity to become familiar with the ideas and methods of the social sciences, if more widely available, would be most useful.

Certain difficulties are inherent in the nature of team work involving a number of different disciplines. A recent report² discussed the incidence and types of difficulties that have arisen when team members, or advisers from the social sciences had been teamed with administrators in government agencies of different kinds. The incidence of difficulties was so high that the chances were negligible that so many awkward people could have been brought together either by mistake, accident

¹The discussion was opened by Dr. A. T. M. Wilson.

²Russell Sage Foundation, Annual Report, 1959.

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or even by active planning. Evidently, in such teams something more than inter-personal relations is important. It looks as if it would be simple to say 'Here is a problem with economic, social, psychological and clinical aspects. Find one of each of these people, each one good in his own way, and get on with it.' But it may be a very long time before such a team can work as a team and really get on with the job. There are problems of organizational planning, of status, of disciplinary narrowness in individual backgrounds, none of them easy.

Obvious Team Problems

Specifically there is often in mixed teams a basic administrative problem with respect to the division of responsibilities and activities between colleagues from the social sciences and public health workers who are forming a team—

MEAD : especially when the anthropologists are very young and are brought into contact with very senior people in the hospital or public health world. They usually are young because only young ones are available for this kind of field work at present. And instead of being allowed to learn their new job slowly, they are suddenly asked to carry the whole responsibility of their discipline.

There may also be an administrative difficulty, relatively simple but not always easily overcome : that of a disproportionately small budget for the early exploratory studies, the extended job descriptions which most project recruiting needs and for the essential project planning and the orientation of staff. This type of difficulty may arise at policy-planning levels from a lack of awareness of the extent of the preparatory work necessary, especially where the work involves the selection of social scientists suitable for a particular project. The funds available to international administrators for the recruitment and selection of specialists of almost any kind would be regarded as ridiculously and dangerously small in most other types of operation, for example, in industry or commerce.

If a project is to be set up in a region, where, it is hoped, social

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scientists will be effectively employed, the policy must be worked out at a high level with the help of a senior consultant anthropologist or social scientist. That senior person will then become responsible for the job of project description, and for the selection and orientation of the team-members concerned.

Intangible Problems

There are also more complex difficulties in team work, such as those which frequently arise during collaboration between two doctors if one is primarily interested in the pathological and the other in the psychological aspects of illness.

Some of these intangible difficulties stem from the fact that the phenomena of human life are in reality complex in character, while individual disciplines must select only one aspect of reality for study. When this division of labour exists, it is sometimes forgotten that it has been a procedural device to facilitate study, and that the complexity remains.

Difficulties in team work often arise because the choice of a profession, or of specialization within a profession, frequently occurs for reasons which are not entirely clear to young people at the time. The choice has often been determined in part, and unconsciously, by personality needs. Contact with members of other disciplines may, for this reason, be disproportionately disturbing.

KLINBERG : Recent research has shown that there are within the medical profession striking group differences between, for example, medical students who are going into surgery and those who are going into psychiatry.

MEAD : There are also differences in the profession of nutrition among men who became interested in nutrition from physiology, or from paediatrics, or from public health. In addition, new professions such as nutrition (and particularly, home economics), are apt to carry the prevailing ideas and attitudes of the particular time and region of their origin. These latter may become transferred to, and to some extent perpetuated in, places far from their source. Some of the attitudes and

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values of the woman home economist of the North-Eastern USA forty years ago are still to be found today quite inappropriately in remote parts of the world.

Differences of the kind just mentioned inevitably create difficulties in inter-disciplinary work which, in any case, forces discussion between team members of the basic assumptions and principles of their particular disciplines. This questioning can be felt almost as a personal assault, and may raise an unexpected amount of resistance and anxiety. The level of mutual tolerance required in mixed teams is high, and involves not only a firm grasp of the scope and limits of an individual's own discipline, but also considerable knowledge of its relation to other disciplines.

Ideally, the teams should form by spontaneous co-operation through complementary interests in a project. Where this is impossible, they must be recruited with at least a direct awareness of the problems involved, and of the highly significant differences between professional authority and personal autocracy. Very often a year's preliminary work is needed by a mixed team before much can be done.

Where a team is unable fully to co-operate, it tends to work either in a fragmented way or as an aggregate of individuals, and the task of integrating the various contributions will be left to the project director or the team leader. In this situation the team members are reduced to the status of technical assistants rather than professional colleagues, and many will therefore resign as quickly as possible.

I have found, in trying to foster integration in mixed teams of this sort, that if you have any observations or research data or experiences that are shared, tensions—or quarrels—immediately decrease to some degree. The child guidance centre, one of our early models of a team of mixed disciplines, always has a child or a family to talk about. A research team in a village, where they all see the houses, the children with trachoma, the way the women carry their babies, can talk about their common observations.

High-level specialists at the top also need to have, in the course of their consultation, something real to share. Coming to Mexico

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ensured there was one thing (the Tlaltizapan village project) that this whole group shared and could talk about.

The Two Approaches

A further complication of field work in the social sciences arises from the persistence of two contrasting approaches to the study of phenomena: the primarily descriptive approach, and the primarily dynamic. In the latter, research is deeper in character and is centred on understanding the forces which are influencing the behaviour under study. Although both types of approach have importance, in recruiting for projects involving change considerable caution needs to be exercised in selecting team members who are, by personality or training, predisposed to remain within the limits of a descriptive approach.

Similar difficulties may arise over those who have been taught to equate scientific work with the exact measurement of fully described variables. On the other hand, contempt for description or for exactitude is not a high commendation in a research worker. The recruiting difficulty lies in assessing the degree to which the contrasting approaches under discussion are deeply linked to personality, and therefore unlikely to diminish with field experience.

Development Personnel

One of the important differences at the moment between the social sciences and the more advanced physical or biological sciences is that in the social sciences the concept of 'development personnel'—that is, 'applied' science staff—does not yet clearly exist. (I prefer the term 'development personnel' to any alternative that includes the term 'applied'. The 'applied' worker tends to feel himself rooted within a pure discipline, benevolently, even patronizingly, using his spare time to help somebody with a problem).

The 'development man' in industrial chemistry or bacteriology is regarded as a very important person. He is fully acquainted with the practical problems of production in industry, and the practical

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problems of general management. He is equally at home with the scientific background from which he is seeking to draw material.

No chemical business would try to run an efficient research and development section concerned simultaneously with post-graduate teaching and development work. It simply cannot be done. More departments or institutes concerned with producing this type of 'development man', and with development work, are long overdue in the social sciences.

The choice appears to lie between the evolution of 'development personnel' or a competitive struggle between the different professions for the positions of co-ordinators of programmes intended to promote community health.

Organizations which produce the 'development personnel' can often produce the type of integrative manager of a governmental agency, a department or an institute, whose job as a team leader is to prevent, somehow, the degeneration of a mixed team into a gang of quarrelling assistants with a non-existing head. Teams with social scientists need 'managers' of this kind.

The first step might be to try to ensure, in any open-minded governmental service, that those who are going to be administrators, or who are going to be used as leaders of mixed teams including social scientists, should in their own training be given an understanding of allied disciplines, and of the kind of leadership provided by the successful business manager.

The problems of nutrition and public health education and those of the commercial marketing world are similar. Commercial experience suggests, however, that the effort required to bring about lasting social change is much greater than is visualized by most public health administrators today.

KLINEBERG : In some universities, for instance, Harvard and Columbia, the people training in social psychology do get at least some training in anthropology and sociology. It might therefore be possible to find, at these places, people with something of that flexible background in the social sciences who could, after field apprenticeship with a service organization

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(Burton), become the kind of 'development personnel' described.

The Essential Need for Co-ordinated Development

ALVIM : In some educational efforts the danger exists that new ideas become accepted before the economic or other changes in the environment, necessary for putting the ideas into practice, are accomplished. When this occurs, parents may become unduly anxious at their own inability to fulfil their newly realized responsibilities and needs.

WILSON : The danger could generally be avoided if the team leader had the same responsibility as the marketing manager, who has to be able to integrate the timing, the amount, the direction and the sequence of effort, and to check what is happening in the different components of a mixed team.

HUNDLEY : In the USA, at the national level, education of the public through the channels of public information and health education is completely unco-ordinated. The methods employed differ, and have no common objective, and the cumulative effect that could result from integration is lost. One reason why eating habits could be changed, to some extent, during the war was that public information and health education were integrated.

MEAD : Judging by some of the current advertising, there is more alignment today between nutritional principles and commercial interests than there has been in the past.

B. SPECIFIC PROBLEMS OF TEAM WORK IN THE FIELD OF NUTRITION¹

There seems to be a good deal of misunderstanding of what anthropology is, and what anthropologists can or cannot do, and this leads to difficulties when public health personnel and anthropologists try to work together.

Cultural anthropology is a pure research science, and a practitioner or 'applied' aspect hardly exists. On the whole, this

¹The discussion was opened by Dr. Margaret Mead.

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is also true of psychology. There are a few exceptions, but the student who, from the beginning, knows that he wants to deal with directed social change is a very rare person.

Recently more attention has been given to the practical uses of the scientific study of human behaviour, and a group of applied behavioural scientists, interested in various aspects of directed social change, is beginning to develop. A few anthropologists have, on their own initiative, worked and gained considerable experience in this field, but there is no established training school or course producing recognized 'applied anthropologists'. There are a few anthropologists taking a course in public health this year (Peterson), but although they will be familiar with the principles of public health, they cannot be described as having reached an accepted standard in the separate discipline of 'applied anthropology'.

Difficulties have arisen from time to time in the application of anthropology to public health. There have been many reasons. The chief has been a lack of selectivity in choosing anthropologists to work with public health teams in nutrition. There has been a curiously optimistic assumption among public health nutritionists that any anthropologist who has worked among a given people will be an expert, even though they themselves would not expect *any* biochemist or *any* physiologist to be competent to tackle a field problem in nutrition.

It must be understood that anthropologists or other social scientists who are going to work in some branch of medicine or public health have to be trained for their particular job, and the agencies concerned with training—foundations, governments or international agencies—must be ready to meet this need.

If the anthropologist is to extract the results that the programme demands, he has to be allowed freedom to work in his own way, and he has to have a certain amount of time to orient himself, not only to the local culture, but also to the discipline with which he is to collaborate.

He must become familiar with the existing state of nutrition of the people, and study the related factors. He must study the diet

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assays and nutritional status data already obtained. He must familiarize himself with the methods and psychological assumptions in use among health educators, as well as with the cultural attitudes towards food and nutrition of the team members from different nations.

He must also be able to do field research on the existing culture, and even on past phases through the memories of older people, so as to establish an accurate schema of cultural emphases. He can then work effectively with the team personnel involved in changing the food practices pertaining to production, consumption, child rearing, and so on.

There is, moreover, a tremendous shortage of anthropologists and even the applied anthropologist continues to be a research worker. It must also be understood and taken into account, that at present and in the foreseeable future, anthropologists will not want to work in any programme unless they have some opportunity to do research.

Until a separate discipline of 'applied anthropology' (with all that it means in the way of job and advancement opportunities) has become established, the anthropologist needs some incentive to work in public health programmes, and that incentive is the opportunity to continue his research activities. Failure to appreciate this has created problems in the past between the public health workers who want a certain job done, and the anthropologist who sees his task differently.

KLINEBERG : In psychology, there does not seem to be the same reluctance to relinquish research activities. A great many people who have spent a lot of time doing research for their doctorate, later go into advertising, market research or other industrial activities. A number of students would, I know, very much welcome an opportunity to work in or for an international organization or in a foreign country, for a number of years, but do not know where the opportunity is to be found.

A clearer identification of the kinds of job opportunities in the health-nutrition, health-education field, for people with

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training in one or another of the social sciences, would be helpful to the universities.

SCRIMSHAW : We have found in INCAP, that once the anthropologist has had time to orient himself and to work in his own way, he can be most helpful in public health nutrition problems. One young anthropologist came to our aid when we were having a great deal of difficulty with an experimental programme in three villages, due to lack of co-operation and friction between members of our team and the town population, and even within the team. After living in one of the villages for some time, he made two simple suggestions which resulted in co-operation in this village and in the other villages.

Now, several years later, as a result of his experience and his effect on the field teams, we have been able to go into villages with relative ease and without the difficulties which seemed insurmountable in the beginning.

On another occasion, who arranged to send an anthropologist to Guatemala to look into food habits and attitudes and help us in planning the development of Incaparina. The information she gave us has been most useful in many ways.

DEAN : WHO has encouraged the participation of anthropologists in the study of nutrition problems in other countries. In Indonesia and Malaya the aim was to study the social and cultural factors which contributed to the development of protein malnutrition in children.

To facilitate and develop this co-operation the strategic positions where anthropologists with specialized knowledge, and other specialists in nutrition, agriculture (Platt), and public health (Scrimshaw) can do the largest amount of good, have to be worked out nationally and internationally.

But first of all, those responsible for public health education with special reference to nutrition, must decide what kind of behavioural scientist is needed. Once the public health people have created the 'slots', the social scientists will begin to direct students and senior people towards learning how to fill these 'slots'.

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The Place of the Social Scientist

There are several possible levels at which anthropologists and other social scientists could contribute usefully in the field of public health nutrition.

Top Level

An arrangement by which five or six senior people, with long anthropological experience and familiar with nutrition and public health, taught in schools of public health would be ideal. Here, they would be able to influence the key people from different countries who are going to shape nutritional and public health programmes around the world.

The behavioural scientists, including the historian, should figure largely in the training of the health education specialist. These public health workers must have some sense of cultural relativity, and understand their own culture and its effects on them as individuals and as educators. They must know how to deal with international training groups, to see that the people who come from other countries really learn while they are in the new country. They may have to help these people to deal with the change that is going on in themselves, so that on their return they can re-adjust easily, and establish an unimpaired relationship with the most backward members of their own community.

As Nutrition Institutes where the top planning will be done are built up, the place for the behavioural scientist should also be developed, with the recognition that he will continue to be a research worker.

Regional Level

Additionally, regional specialists are needed who have worked for years in a particular part of Africa, or Central America or South East Asia, and who are prepared to direct, as consultants at regional level, the surveys or special kinds of training which need to be carried out, or advise on the teaching materials to be used.

Field Level

Young anthropologists or sociologists working with experimental

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research teams are also necessary. They will be able to describe what happens, from an anthropological or psychological point of view, in the village situation. Working with a team, they will see what public health practice is, and what the agriculture extension people are doing. They will be able to provide the data that can be used in the training of people in the schools of public health, and in policy-making in the Institutes of Nutrition.

For this, some kind of 'elevator shaft' is needed so that the research information collected can be related to all public health and agricultural practices in the region. The success of this two-way movement of knowledge will depend on the degree of co-ordination achieved. Not only is there a need for a flow of information up and down the 'elevator shaft', but knowledge of nutrition and nutritional policy must spread out into the Education and the Agricultural departments, as well as the Health department (Platt) so that everyone in contact with the people carries out nutrition education (Sebrell) and speaks with one voice (Autret).

The mechanism of co-ordination will vary from country to country, and even in different parts of the same country. In some parts of Latin America the Nutrition Institute, situated in the Health department performs this function, in others Nutrition Councils are developing (Scrimshaw).

WILSON : Co-ordinators, whose task will always be very difficult, are needed at various levels, wherever the field workers and the specialists meet. The secretary of the top-level committee, or the Chairman of the Nutrition Council, or the Director of the Nutrition Institute may act as the co-ordinator at one level; at another the health educator, the home economist or the agricultural agent (Autret) may be the most suitable person.

The most important point is that, finally, there should be a single channel through which decisions about the facts to be taught and actions to be taken, are transmitted.

12

*The Training of Nutrition Workers*¹

IT CAN be taken for granted that every nutrition programme in the world is handicapped by lack of adequately trained nutritionists. Also, it must be realized that any nutrition programme should be national, within the framework of national policy, with variations according to the different parts of the country. The national programme must take into account the political background, and the problems created by the rapid increase in population; these have already been mentioned.

The prevailing system of land tenure is also important. Where the tenant farmer has to pay up to two thirds of the total agricultural crop as rent to the landowner, little can be done.

The prerequisite to adequate community, and ultimately national, development is some system of providing a nutritionally sound food supply that will enable the population of that community to work and to produce. At present, however, no country can base its food and agricultural policy solely on the nutritional needs of the people. Many other factors have to be taken into account before practicable measures for meeting these needs fully can be devised.

A public health nutritionist with a very broad grasp of a large

¹The discussion was opened by Dr. Ruth Huenemann and Dr. W. Henry Sebrell, Jr.

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number of subjects, including political economy, agriculture, education and human nutrition, and capable of influencing ministers of government, is therefore needed at national level in every country or, preferably, wherever regional government authorities exist within a country.

Training that provides competency in the wider aspects of public health nutrition is not yet available everywhere. Most of the present-day specialists in this field originated from one of five backgrounds of training: agriculture, home economics, medicine or public health, chemistry or biochemistry. Each has specialized knowledge in one or more aspects of nutrition, but none has the comprehensive view necessary for dealing with such a many sided problem as public health nutrition.

Contrary to expectation physicians are, as a rule, poorly trained in nutrition, especially as regards the prevention of malnutrition. The physician, nurse or sanitarian who goes on to graduate work in a school of preventive medicine, faces a curriculum so loaded with public health courses that there is limited opportunity for the study of nutrition or nutrition education.

SCRIMSHAW: It is possible to take the course in Maternal and Child Health in the curriculum of the MPH diploma at one of our leading schools of public health, without hearing the word 'nutrition' mentioned. There seems to be a general lack of recognition of nutrition as an integral part of public health, not only by doctors, but also by all categories of public health personnel. The dietician has had no training in any of the concepts of public health, and therefore finds it difficult to work with the public health personnel, while the home economist may become so interested in the practical demonstration programmes—canning and sewing, etc.—that even she is not interested in teaching nutrition. The general unpreparedness for work in nutrition applies even more to field and epidemiological research. There, special training is always a prerequisite.

Because of the shortage of competent people, some health departments have given public health nurses special training and

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added nutrition activities to their responsibilities. In such cases, the training is usually directed toward a particular function, such as nutrition education, with little opportunity for wider study of the whole subject.

ALVIM : The nutritionists who train our nurses have themselves been trained in foreign cultures, and do not recognize the local problems or try to adapt their teaching to them. In addition, there is little or no co-operation between nutritionists and public health workers, and we rarely hear the results of field studies and other activities that would be most pertinent to our work.

BURTON : Modern textbooks describing the basic and agreed facts about various nutritional problems are urgently needed by doctors working in nutrition in many parts of the world today.

The older textbooks will enable a doctor to diagnose serious deficiency disease. There are at present, however, neither textbooks nor training which will help him to recognize the environmental conditions—social, cultural and economic—which cause the deficiency disease, or which prevent the affected person from seeking advice early, or which could establish prevention or cure on a permanent basis.

To meet present-day needs, a new kind of nutrition training is required for professional leaders.

Training of the Public Health Nutrition Specialist

This training should include the study of

1. food production,
2. the role of agriculture in the country's economy,
3. the factors that govern the price of food and the types of crop that can be produced,
4. the reasons for the production of cash crops,
5. the problems in the export and import of foods,
6. the methods of food preservation which conserve nutritive value, prevent wastage and lengthen the season of availability,
7. the chemistry and nutritive value of food,

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8. the basic facts of food adulteration and toxic substances in food,
9. the nature of proper food laws and regulations,
10. human nutritional requirements and recommended allowances in terms of each of the specific nutrients, and
11. the adaptation of this knowledge to local foods and menus,
12. the technique of conducting a nutritional appraisal of a population—combining a study of food habits, food resources, vital statistics, nutritional status and laboratory determination,
13. techniques of health education,
14. the principles of sanitation, public health practice and the health department organization.

Classroom training on these subjects should be followed by an organized programme of guided field training, which should provide opportunities

1. to review information on the most prevalent forms of serious malnutrition and to determine the different kinds found locally,
2. to study cases of severe deficiency disease in the local hospital,
3. to interview the mothers or patients on the circumstances under which the disease developed,
4. to become familiar with the foods available, domestic and imported, as well as the agricultural exports,
5. to review the nutrition programmes in the country, especially those in schools and clinics; to see a school feeding programme and a maternal and child health clinic in operation,
6. to review the educational materials in use by all agencies in the country : films, radio scripts, literature, posters, etc.,
7. to study the social and cultural environment of the people in an urban and a rural community.

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The accompanying chart (Appendix 1, p. 196) will help the student to acquire and organize the essential knowledge about a community. The trained nutritionist may also find it useful in planning his work and in training students.

The student should present a critique of the existing nutrition activities in the country, for discussion with his teachers, along with suggestions as to what might also be done in the long-term solution of the total problem.

Present Possibilities

Although this high-level public health nutritionist does not yet exist, there are others, who work as nutrition specialists, and as equals, with the physicians in the public health team and in schools of public health. Unfortunately, in some countries the nutritionist is not always regarded as the professional equal of the physician or public health administrator, and may therefore have difficulty in influencing policy and planning (Sai).

PETERSON : The public health administrators must also be educated. They can often make or break the programme proposed by the technical people, the nutritionists, the cultural anthropologists, the health educators, and so on. Especially in subjects such as nutrition, they should be aware of the need for and value of research, which was not in the past considered part of public health. Without their full understanding and support, it is impossible to plan and carry out successfully any nutritional improvement programme on a large scale in any country.

In different parts of the world, efforts are being made to prepare nutrition workers for the particular problems which are found in the economically under-developed countries to-day. The training varies with local conditions, but certain problems are common to all regions.

Selection of Students

The selection of nutrition field workers is vitally important not only from the point of view of their future usefulness, but also

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because ill-chosen students (post-graduate or in training) may, during their field training in a community, prejudice the people against further public health activities. Though field work is useful for weeding out unsuitable students, the initial selection must therefore be given great care.

Wherever possible the help of an experienced psychologist should be sought to ensure that the person selected will be able to make good contact with the people among whom he works, and will do his work with tolerance and understanding of the difficulties facing those he wishes to help. For this work the human qualities are often more important than the intellectual (Gómez, García, Horine, Velasco).

SCRIMSHAW : We tend to recruit our public health and nutrition workers from the middle and upper socio-economic groups. While they may know the characteristics of their own culture, they also think they know the characteristics of the people in the lower socio-economic groups with whom they are going to work, but they do not. We find it is very difficult to orientate health and social workers to the problems, feelings and attitudes of lower socio-economic groups in their own countries, and this greatly handicaps our educational efforts (Alvim). Often people coming from outside are easier to train than local people and better able to understand the way the Indian communities in Guatemala, or the impoverished mestizos all through Central America, think about their problems. For certain types of activities, auxiliary nurses, or social workers who come from the same socio-economic groups as the people with whom they are going to work, have proved more effective in field operations than more highly trained individuals.¹

KLINEBERG : What kind of social science should be introduced into a curriculum for the training of nutritionists, so that they have at least a basic understanding of social factors,

¹In such circumstances, presenting the more highly educated health workers with the chart shown in Appendix 1 to be followed in detail, may help to convince them that their knowledge is quite unsystematic and inadequate (Read, Background Paper No. 8).

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social phenomena and social conditions which will help them in their work, until such times as there are well-trained social scientists available everywhere?

Aspects of Social Science Important to Nutritionists

MEAD: Future nutrition workers should have some understanding of a whole system: of the way in which each part of a society interacts on each other part, the way the values and ideas of one part are related to those of all the other parts.

They should also have some idea of what observation means, of how we arrive at whatever understanding of people we have, and what the different kinds of research entail—how we watch a mother and child and analyze their behaviour, or survey a community to find out what the class structure is, what the religious structure is or where the main lines of fission fall.

They must also have some awareness of their own culture. Just as the psychiatrist to-day is usually subjected to a personal analysis so that he is conscious of his relationship to his materials and to his patients, those of us who work with changing social norms must know where we stand in the picture. We must have an acute awareness of our own cultural position.

Once people become aware of their own culture, of their own values, of all the things that they once took for granted, they are less likely to inflict on other people unrecognized parts of their own background and personality and prejudices. This does not mean that they give them up. They may still feel that taste is the important thing about food, or they may have exceedingly precise specialized ethical or aesthetic preoccupations. But they are aware of what they are, and they are then able to use and make available their knowledge of the human sciences, without the degree of unrecognized personal involvement which distorts what they are doing. Some idea of methodology with regard to arriving at conclusions about society and about people in society would also be useful. Even a moderate degree of social science training develops an

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ability to weigh the evidence in the social field (Klineberg).

The Training of Field Workers¹

How this training can be done, and who will do it, will depend on local resources and the type of social scientist in the particular area. In some countries to-day the nutritionist, who needs a more specific knowledge of the culture than the administrator, is acquiring such knowledge in the course of formal academic training.

In a great many areas of the world, however, there are no trained social anthropologists in schools of public health or nutrition. Under these circumstances the nutritionists should have, if possible, some post-graduate training and practical experience with a social scientist in the field, making and interpreting their observations under his guidance.

The experience is best gained in the actual place where the nutritionists are going to work because the approach to dietary improvement must be regional, rather than national or international. Resources are not distributed with regard for political boundaries; nor does culture observe such boundaries, and rarely does a nation have a homogeneous culture within its borders. Each region or cultural group has to be studied on its own. Particularly where possibilities for dietary improvements are to be found in a wider use of the resources already available, the nutritionist will need to become familiar with various cultural and social aspects of food and food habits.

The Kind of Knowledge Needed

What, for instance, are the differences in diet between rural and city folk? What special foods are associated with status and prestige? Occasionally, in East Pakistan, one hears comments such as: 'A gentleman does not eat red rice;' or 'Rich people do not eat *dhal* (pulse) greens.'

Prestige is a potent factor in effecting changes in food habits and, lamentably, such changes seem almost invariably to be for the worse. For example, most Mexicans prefer *tortillas* of white maize

¹The discussion was opened by Dr. Isabel Kelly.

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to those of yellow, although the latter is a better food; when means permit, some abandon the *tortilla* completely, in favour of white bread. On the Bolivian altiplano, *quinua*, which is an excellent food, is usually associated with low social and economic status. Consequently, when a family can afford more expensive but less nutritious fare, it happily selects that.

What dietary restrictions are applied to the pregnant woman, or does she eat 'everything which God sends'? What are the limitations on her diet in the days following birth? Is she prohibited water and moist foods, as well as highly seasoned ones? Is she put on a deliberately dry diet (East Pakistan), which may make it difficult for her to produce and maintain a supply of milk for the baby?

What are attitudes and practices with respect to infant nutrition? Is the colostrum thrown away? Is prolonged nursing considered particularly desirable?—for economic reasons, or as an accepted way of trying, for the time being, to avoid another pregnancy? Is a small baby given water as well as milk? Does the infant receive supplementary foods? If so, what are they and at what age are they given? What ideas are associated with weaning and what foods are considered suitable?

Are certain foods considered particularly appropriate for small children, for adolescents or for elderly people?

Does a wife generally eat after the husband? Is it customary for her to eat chiefly what remains after he has finished? If so, the food consumed by a given family may not be divided equally among the male and female adults. Do only the men eat eggs? If so, the number of eggs consumed in the family per week may give an optimistic impression of the protein available to the female members of the group.

How are the meals prepared? Is the ascorbic acid content destroyed through prolonged cooking? Are vitamins and minerals tossed out, with the excess water, when foods are drained? Are vegetables normally boiled or fried? What condiments are used in sufficient quantity to be useful sources of vitamins and minerals? What wild foods are significant in the diet?

What are the current folk classifications of food? Which are

considered 'heating' and which 'cooling'? The same food is not always classified the same way, from one area to another or, for that matter, within the same area. For example, in West Pakistan, one sometimes hears that flour made of recently harvested wheat is more 'heating' than that made of grain which has been in storage. Moreover, a stale wheat cake is less 'heating' than a freshly-made one. When do such categories of 'heating' and 'cooling' operate in the selection of foods? Invariably or only in case of illness or after parturition? Are they seasonal, so that one tries to eat 'heating' foods in cold weather and vice versa? Or is it said that the body becomes 'heated' during winter, so that 'cooling' foods are appropriate?

What other classifications are current? Are some foods 'drying' or 'irritating' or 'windy' or 'heavy'? And how do such qualities affect the choice of foods? The chances are that they may have a good deal to do with the acceptability of the recommendations which, from our point of view, are designed to improve the diet.

Quite apart from these popular categories, there are likes and dislikes, as well as deep-seated prejudices, all of which are involved when dietary change is under consideration. Some foods we consider admirable may be regarded as either devoid of food value or as positively harmful. Is it believed that lentils, if eaten for 40 days, will cause blindness (West Pakistan)? Or that white sugar is preferable to brown, which destroys the teeth (Tehuantepec, Mexico)? Or that buffalo milk will make a person strong physically, but dull mentally (West Pakistan)? Or that a child who is given animal blood as a food will not learn to speak (Highland Bolivia)? Or that buttermilk is 'poor' fare, 'because all the food value is in the butter, which has been removed' (West Pakistan)?

These points by no means exhaust the cultural associations which are pertinent to the planning of dietary change. They merely give some idea of the sort of cultural material which should be taken into account, yet which may not come to light in the course of a conventional nutritional survey.

H U E N E M A N N : One of the main values of field work is that it allows the student to realize that he has as much to learn from

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the community as it has to learn from him. If he sets out only to 'teach' and 'give information' he will not get very far.

DE ZAYAS : To be effective and worth while, and to warrant the amount of money, time and energy various people put into it, field work must be really well planned. Consultation between those who are to receive and guide the student in the field, and those responsible for his complete training is essential. Without this preparatory work, field experience (especially for post-graduate students foreign to the country) may degenerate into a sight-seeing tour.

REES : The lack of suitably educated people who are capable of undertaking a specialized training in nutrition or any other branch of public health or social work, and are then content to work on a meagre salary, usually in isolated rural areas where the amenities are poor, is a major difficulty practically everywhere. For many years to come, much more use will have to be made of people who are less well trained but have plenty of common sense. Neighbourhood groups who can call in a limited number of well-trained people may be one solution—as well as the full use of all the existing auxiliary workers.

The Training of Village-level Workers

No family should have to deal with the representatives of six or seven disciplines. In the villages there will have to be some single individual, the 'lady visitor', the auxiliary midwife or the 'village-level worker', who can cope most of the time (see p. 124).

Village-level workers recruited from the village may have no more than a primary school background; they participate in the village culture sometimes so fully that they are not very helpful in efforts to change food habits. They may share all the local beliefs about foods and must therefore be given some perspective with regard to their own culture.

No social scientist is going to be able to run around from village to village and train village-level workers. But it is possible to make several studies and thereafter to prepare a series of guidelines for whatever training institute the village workers attend.

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When it comes to nutrition, training of the village-level workers must be fairly arbitrary, concrete and in terms of specific foods. There are tremendous possibilities for misunderstanding in training people who are barely literate, hence the need for specificity—using terms the village people themselves use and the local classifications of food whenever possible. As an example, in Bolivia the term *alimentos secos* (dry foods) applies to all the cereals, is understood by everyone and should be used in preference to the term ‘starches’ or ‘cereals’.

BURTON : The training of assistants, auxiliaries and village workers requires the best educational techniques, because the village is where the things that really matter happen. Village-level workers are often highly intelligent people, lacking in knowledge and the experience of formal education. I have found that methods involving discussion, argument, reasoning, problem-solving and demonstration are more suitable for this group than straightforward lecturing. There is an argument for the dogmatic approach when it comes to establishing a technique such as vaccination, when you can say ‘We—and you—are going to use this method’. This is perfectly legitimate, but when points of view, and situations over which one has little control, are being considered, it would be entirely wrong to deal with them in a dogmatic fashion.

Whatever the methods used, they will probably be reproduced by the village worker in his contacts with the people. If his teachers are dogmatic, he in his turn will be equally dogmatic (Mead, Velasco). The important thing is to keep ‘professional authority’ distinct from ‘personal autocracy’ in behaviour. The word ‘dogmatic’ has, unfortunately, an element of both, one of which is necessary, and the other fatal (Wilson).

In all circumstances whoever works in nutrition must realize that his own learning is never complete, and that continuous in-service training is necessary, no matter how good his record as a student, or in his own job (de Zayas).

The Need for a Comprehensive Policy

RAO : To get workers and train them is one thing, and to get

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them fitted into the existing machinery is another. Although trained workers are necessary in many places, many governments have neither schools for training nor remunerative opportunities for the trained.

AUTRET : At a recent meeting¹ held to consider the training of various types of personnel for work in nutrition in Europe, two kinds of training, graduate and post-graduate, were discussed. The aim of the latter was to give the non-medical graduate (agriculturist, veterinarian, school teacher, biochemist, etc.) the additional knowledge that would enable him to function as a nutritionist. It was also suggested that some training in human nutrition would be specially useful for agronomists working in regions such as Africa or Asia.

In many countries where nutritionists are needed, however, three-year nutrition courses do present difficulties in terms of available teachers, funds and absorption of the qualified nutritionists afterwards. A study is now being made by FAO, WHO and UNICEF² in a number of representative countries in different parts of the world, to discover the possibilities of the absorption of nutritionists at all levels. The results should show the requirements of each country in terms of numbers and categories to be trained, the kind of training required, and the role of nutrition in the different disciplines that participate in the solution of the total problem.

FAO and UNICEF have given much thought to the training needed for personnel on their joint assistance and guidance programmes in the field. The results are given in Appendix 2 (p. 198).

Bridging the Gap

In the case of the high level public health nutritionist for whom no training is at present available, there seem to be several ways in which the gap might be filled. The medical or

¹FAO/WHO Symposium on Education and Training in Nutrition in Europe. Bad Homburg, 1959. FAO Nutrition Meetings Report Series, No. 26 (1960) Rome.

²U.N. Economic and Social Council Report E/ICEF/420/Add. 1 (1961) Training Survey—Nutrition.

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non-medical nutritionist might be given some knowledge of agriculture and economics, or the agricultural economist some knowledge of nutrition. The latter might be quicker and better. There is also a need for someone else who apparently does not exist, a 'production planning specialist', and here again a compromise has to be found.

In planning food production the nutritional as well as the economic factors must be considered. Close contact between the food production planners and nutritionists is therefore essential. In the past this has not always been adequate or effective, nor is it likely to become so until nutritionists with some knowledge of agriculture and of economics are assigned to ministries of agriculture. Similarly the home-economist and the agronomist, working together, can influence the production of food at the village level to meet the nutritional needs of the rural family. It is, in fact, extremely important that all the non-medical field workers in home economics, agriculture, education or community development also receive some training in nutrition.

WILSON : Looking ten years ahead, to what extent would it be better to build up nutrition almost as a separate profession apart from public health, or to build some speciality within public health? Or would it be better somehow to try to take public health along with nutrition? The changing character of public health throughout the world has been stressed. It is possible that the established organizations devoted to training and research may be, here and there, a little out-of-date.

The whole question of training medical personnel to promote health through nutrition education or any other form of health education, as well as to treat disease, needs re-thinking. I remember hearing a mother with a three year old child ask the doctor in a child health centre 'Why is my baby not sleeping and off his food since my husband went on night work?' The doctor replied 'It sounds like worms, we must examine the stools'. The answer might be clinically correct, but it was undoubtedly disappointing to the mother, who, as further enquiry showed, did not return. The doctor had failed to recognize the

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mother's theory of what was happening, to respond to it, or to comment acceptably on it. What should have been an educational and counselling situation had regressed to a more familiar clinical form, which frustrated the mother's aspirations to learn about matters of interest to her.

The need is to link—in terms of staff, or of staff training, of organization and of client and patient relationships—the handling of illness and the promotion of health. It is particularly necessary to build up a type of educational organization which is appropriate to the mode of thought of the particular communities, households and individuals for whom both curative and preventive services are designed.

Examples of Present-day Training for Nutrition Work¹

Training of a Nutrition Research Team

CRAVIOTO : The team for Tlaltizapan was very carefully selected. We chose people who were interested in social work, and could at the same time tolerate the fact that during the study nothing practical could be done to help the villagers.

The team consisted of two good social workers each with three years' experience of practical work with children, a doctor who had had six months' training in the school of public health, a public health nurse, and a keen young paediatrician.

The group trained together at a Training Centre in Mexico City. The data collected by the social workers in a short preliminary survey of the 'experimental' and the 'control' groups of families were used as the basis of the training. The first lesson developed from our inability to elaborate or analyze these data because the survey had not been thoroughly planned beforehand.

Basic nutritional theory, interpreted in terms of how the requirements of the family were met by the food that was actually or potentially available, followed.

An anthropologist instructed us on the anthropological point of view, especially the use of a proper frame of reference.

¹Editors' Note: There are, of course, in different parts of the world, several recognized schools of nutrition training which are not mentioned here.

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Statistics were studied to encourage objective, accurate observation of factual material, and to provide experience in recording and interpreting the results in various ways.

Our findings and ideas were discussed with the personnel of the Nutrition Department, and once a week with the anthropologist, who whenever we came to a conclusion would destroy it immediately and ask for a frame of reference! By the end of the third month, we were thinking in terms of frames of reference.

Lastly, the psychologist taught us to think of malnutrition as due to deprivation or psychological factors or some other environmental influence.

After this initial period of adjustment, the team spent about a month on the production and testing of various aids. In-service training in monthly week-end visits to the village began by comparing the information we were collecting (either by direct questionnaire or by indirect questioning) with our actual observations, and discussing the results with the team of instructors.

We re-studied, four times in a row, fifteen families, to show the difference between the first interview and the others, and between different approaches in interviewing. For instance, one might begin by saying 'How beautiful is the morning! I slept so well,' or 'What a dull thing it is to be awakened at seven o'clock in the morning', and note the difference. And there were differences in the replies received, especially when we were trying to record attitudes to food, to people, and so on.

All this time we were reading history, nutrition, anthropology, psychology, etc. but, in general, the training was practical, based on the previous exploration and going from that exploration to an actual way of collecting information.

Post-Graduate Training

DEAN : We have had three B.Sc. graduates of the School of Nutrition of London University in our research unit in Uganda. They seem to have had a very good grounding in nutritional

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work, but if they are to be useful in an under-developed country, they need to work in such a country. They stay with us for about two years.

For the first six months, their prime work is routine chemistry related to foods or to the treatment of kwashiorkor. During those six months, they are introduced to the work of the unit in general, which is many-sided and includes various field studies. They supervise the preparation of experimental diets, they work on the technical details of the development of our new foods (see p. 105) and they explore means of teaching mothers the use of the foods. They have also collected much of the socio-economic data presented in the account of malnutrition in Uganda.

After this training, they are well equipped for working in public health teams or for teaching teachers of nutrition in developing countries. They have a good background knowledge of the clinical and technical elements, and also of methods of dealing with problems and people in unfamiliar situations that they could not possibly have learned in London.

Graduate Training

POORWO : In Indonesia we have had eight years of experience, with continual evaluation and subsequent changes, in training nutritionists at bachelor level, for work in the public health office in a regency (county). They should be able, with the help of the specialists involved, to do a nutrition survey, including the agricultural, economic and sociological aspects, and to plan a nutrition improvement programme.

Difficulties in training arise from the selection of students. Students who are socially active, stable, sympathetic and practical are preferred. A second selection takes place after the first field work and at the end of the first year. Approximately 12 students finish, out of a total 35 who start each year. A further difficulty arises in the choice of the right teachers. Nutrition is part of many subjects and the agriculturist, anthropologist and physician who act as teachers have first to adjust themselves to nutrition problems.

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During the first year, the students carry out a week's 'family life' survey. They stay in the village and each lives with one of the families.

In the second year, they do a kind of public health survey, working in public health and maternal and child health centres, and looking at the marketing and handling of meat and other foodstuffs.

Towards the end of the third year, the students work in a village and in the regency, and do (under supervision) a food balance and a nutrition and sociological survey. Each student then makes a report and a plan for the improvement of nutrition in that regency.

For the surveys in the third year an agriculturist and a doctor, and (whenever possible) the sociology students work with the nutrition students as a team. The third year's field work and the subsequent discussions take four months. The remainder of the semester is spent in the Institute of Nutrition, learning about the applied programmes, about nutrition education in schools and maternal and child health centres, etc. (see Appendix 3, p. 201).

After this training the nutritionists do very well, but need strong support from the physician director of the public health unit, who should also be nutrition-minded. They keep in close touch with the Nutrition Institute, and once every 3 or 4 years attend a seminar to bring their knowledge up to date and to discuss nutritional policy.

In addition, auxiliary workers known as *junior nutritionists* function as assistants to the nutritionist, who is responsible for a population of 300,000 to 500,000. They are mostly girls who have passed a Homemaker's training course at Junior High school level. Their training, a similar but simplified course, is carried out by the trained nutritionist and takes two or three years. Their work includes training village level workers, instructing housewives and helping teachers, midwives, agricultural workers and physicians doing nutrition work. Five or ten of them work satisfactorily under one nutritionist.

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Short Experimental Training

CHAVEZ : This year, the Institute of Nutrition and the School of Public Health in Mexico City offered a short (one year) experimental course to see if it was possible to meet the immediate need for 'community nutritionists'. The programme was designed specifically to prepare the students for the field work needed in Mexico itself.

We have a very diversified group of students—a doctor, a dietician, a chemist, school teachers, public health nurses and some others with different backgrounds. The diversity has proved useful : the students learned from one another and the course could be speeded up.

Theory is linked to practical subjects, and all courses are co-ordinated to meet the final goal : to enable the students to carry out public health nutrition programmes. For example, in learning the administration of such programmes, the students first study sociology, psychology and general administration, and after those three courses, are taught administration in public health.

We try to ensure that the basic teaching team, consisting of two physicians, several nutritionists, a biochemist and an anthropologist agree among themselves on the programme, subjects and field work, and have similar ideas about what should be taught. At present, we have had only six months' experience with this course, but the results seem to be better than were expected. The establishment of a regular course along similar lines, dealing with the main needs in Mexico—the introduction of nutrition activities in current public health programmes, the establishment of nutrition programmes, the supervision of diets in mass feeding programmes in hospitals, schools and factories etc., and nutrition education of public health personnel—is being seriously considered.

The teaching must be concentrated and the practical work well supervised. A great deal of field work, and many instructors who will work with small groups are therefore essential. It is too early to know whether, in the long run, this type of training will be satisfactory, but for the time being, it has proved not

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very expensive, and many people are being trained quickly.

Training of Health and other Professional Workers in Nutrition

Until several categories of people such as nutrition workers attached to health departments, medical clinics and hospitals, and in other central organizations such as departments of agriculture and education, and teacher-training colleges, have been given some wider training in public health nutrition, the present scarcity of trained nutritionists will persist. In most countries efforts have to be made to give all health, social and medical workers a knowledge of nutrition adequate for their particular spheres of work. In addition, it has been found that non-professional workers, if they are given some preliminary training, can do a useful job in their own communities, teaching practical nutrition to housewives.

Three conditions are necessary for the best use of these two groups as nutrition educators. They should have frequent in-service training and they should have ready access to consultant services. Also, because nutrition education at the community level has to be done in terms of food, and because foods and food habits vary from district to district, even within a country, a trained nutritionist-consultant must be available for each area that has distinctive food habits.

In many of the developing countries, supervisors already exist, but not consultants. With a consultant giving technical information but no administrative supervision to the less skilled person, the interplay of teaching and learning can take place more freely.

Medical Students

JELLIFFE : In Makerere College Medical School there is too little emphasis on nutrition *per se*. Nutritional topics have therefore to be dealt with in various parts of the curriculum, particularly in paediatrics. We try to blend clinical, preventive and community nutrition in paediatrics, with increasing emphasis on health education, throughout the whole of the students' training.

There are lectures and seminars as well as hospital training,

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both in the general unit and in the outpatient clinics. In the hospital, health education for the mothers has recently been emphasized, and we have put up a model African house outside the children's wards.

The students are taught that individual as well as group health education of the mothers will be part of their normal duties. This is valuable not only for the students, but also for the nurses.

The students also do some of their nutritional training at the Maternal and Child Health Centres and, lastly, in the community.

Community work takes two forms. First the students watch, advise and guide, through the whole of their clinical period, ten families allotted to them. We also try, within the limits of staff and cash, to take the students on a field survey trip. On this 'teaching safari' they can combine their own research with assisting in ours and can see actual conditions, nutritional and otherwise, in the field. Incidentally, they perform a service to the community while broadening their own horizons.

Public Health Workers

SCRIMSHAW : For public health workers the inclusion of nutrition in any course in public health seems imperative. For these who are to assume leadership in public health nutrition programmes, a public health degree followed by a year of specialized study in nutrition, and later some field experience, will be necessary.

We have found that the in-service orientation of qualified public health people in nutrition can be carried out by means of 2 to 3 months of intensive seminar-type discussions, with field experience covering public health, nutrition, clinical nutrition from the public health point of view and the evaluation of nutritional status.

In Central America, a relatively short training given to nurses or school teachers to enable them to work as auxiliary nutritionists has proved unsatisfactory. On their return to their own countries they do not really know enough nutrition to instruct or influence the other members of the health team. Yet a

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university-level training programme for nutritionists is a prolonged and expensive undertaking for an under-developed area.

As a compromise, we are now trying to take persons who are already university graduates in pharmacy, in biology or in biochemistry, and give them first a year of intensive work in the basic elements of the training of a nutritionist and a dietician. The second year includes an internship divided between the public health aspects of nutrition and dietetic work in institutions. By this means we hope to prepare workers who are professionals, with a university degree and a certificate in both nutrition and dietetics, and who can serve as leaders.

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*Suggestions for further Research*¹

Introduction

IN ANY form of social research a number of difficulties can arise, particularly over questions of adequate access to and contact with the relevant members of the households, communities or societies involved and for whom the programme is being planned.

In the human and social sciences the co-operation of the objects of study—human beings and social organizations—must usually be sought. They have the right to refuse access and have legal rights with respect of the publication of observations.

In clinical research in medicine, the implicit professional 'contract' between patient and doctor may contain an additional 'voluntary clause' by which the patient agrees, with certain safeguards, to act as the subject of some research activity. In this way, within a professional and responsible relationship, access can be obtained to areas of the body and mind which would otherwise be unapproachable, while anonymity safeguards the subject/patient when the results are published.² An analogous type of approach has been developed by various social research bodies³—

¹The discussion was opened by Dr. Margaret Mead, Dr. F. Sai and Dr. A. T. M. Wilson.

²Wilson, A. T. M. (1955) A note on the social sanctions of social research. *Sociol. Rev.*, Vol. 8, p. 1.

³The Institute of Social Research at the University of Michigan, and the Tavistock Institute of Human Relations, London.

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as a means of obtaining access to difficult units of social organization. In effect, such an approach guarantees a professional type of responsibility for what happens during the research and this is based on collaboration between the consultant/research body and the client/subject group.

The responsible collaborative design of research may not always be possible; it is scientifically justifiable, and before long it will almost certainly become politically and legally essential. The time has gone for social research to claim, without challenge, to do things with permission or collaboration, because they are for someone else's good.

Some basic points should be clarified before discussing possible further research.

1. Two complementary types of work in this field are equally important and necessary: first devising and experimenting with means for the improved use of existing knowledge of different kinds, particularly on the social science aspects of nutrition, and, second, research to obtain new knowledge.

2. Although 'research' is usually thought of as requiring a fully controllable and 'sterilized' situation, this, in fact, seldom turns out to be true with respect to social science work, except in certain special cases. There is, however, nothing wrong with 'learning by doing' in the field of nutrition, as in many areas of economics or medicine.

The suggestions which follow are not concerned with specific research projects, but represent areas in which useful work is already going on and might be extended for nutritional purposes.

Category A contains a single suggestion about the use of existing knowledge.

Category B contains project-areas that are predominantly socioanthropological in character.

Category C contains suggestions which, on the whole, centre on the discipline of social psychology.

Category D contains a number of inter-related suggestions, which represent psychological research.

Category E contains suggestions relating to problems of method, including the problem of how team members, representing

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different disciplines, may live together without periods of severe difficulty.

Category A

The use of existing knowledge should be improved by the preparation of relevant types of background studies, dealing with particular regions or national cultures, or types of communities or institutions, or with the collection of material for specific training or educational purposes.

There is a considerable amount of carefully done, highly relevant research that is not, so far, easily available to people now working in the field of nutrition. Sometimes the reports concerned are only issued in mimeographed form in one country and no one hears of them; twenty years later someone does almost the same research all over again. Sometimes, too, avoidable errors of practice are repeated (Rees). Many publishers would be interested in this kind of report, once the technical authors have outlined the potential readers and the character of publication they want.

The need for adequate translation of technical documents is often a hindrance to their wide use (den Hartog) but the problem seems to be as much one of distribution as of publication. It is stressed that distribution should receive at least as much attention as any other aspect of the publication of technical material in the field of public health (Stoetzel, Horine). If the book or monograph does not get to the people who need and want to read it, the money spent on producing it is wasted.

J E L L I F F E : Some central clearing-house is needed, not to distribute the papers, but to distribute the knowledge that certain papers exist and where they are to be obtained.

C R A V I O T O : Perhaps the international agencies could make available to technical people the working papers for their conferences, many of which are summaries of work that has been done, but are not published.

It is recommended that the attention of certain foundations should be drawn to this problem of improving the use of existing

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knowledge, and that, wherever possible the members of the conference should explore the matter further with the foundations.

Category B—Comparative Studies of Social Change in Progress and of Adaptation to this Change

1. *Study of the movement of a known group or segment of population from one known culture to another.* This kind of study could help to clarify the factors influencing the order in which different component-changes occur within the total pattern of adaptation to change. Existing studies are in essence cross-sectional: for example, they describe what the Polish peasant eats in Poland and what he eats in Detroit. We suggest that, having established baselines in a selected population group, each family within it should then be studied over a period of, say, five years, as they adapt after arrival in a new situation. A movement of rural population into an urban area would serve, provided there was a sufficient degree of difference between the old and the new surroundings to make it worth while. If possible, the study should cover quite a dramatic change to start with, to make it easily documentable.

CRAVIOTO: As an experiment, we could perhaps introduce some definite change in a village and follow what happens. It would be easier however, to follow a known group of immigrant families changing of their own accord.

2. *A systematic comparative study of folk theories of health and illness with respect to food, and the methods of learning about, or modifying these theories.* It may be taken for granted that a theory of health and illness—rarely revealed by direct questioning but often emerging in the course of various types of work—always exists as an integral part of a national culture, or of a community, or within an individual. The aim of studies in this area would be in the first place to demonstrate their practical value, for this would be high, as compared with what can be learned from putting together by-products of various people's work—such as fractionated accounts of difficulties encountered in introducing public

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health measures. The project could be carried out with foundation funds. Preliminary planning conferences to ensure that already known material was covered, and that the anthropologists knew what the nutritionists and other health workers wanted, would be essential.

STOETZEL : In France a historical study of folk ideas of cooking is about to begin.

HUNDLEY : We have been asking anthropologists working on their own projects in various parts of the world, to expand their interests to include nutrition or public health information. The anthropologists always say, 'We need some specific preparation for this. What kind of information do you need, and in what form do you need it?' Some relatively simple information booklets, that anthropologists and others making field expeditions could use as guides in collecting this kind of material, seemed necessary. The first step in developing such a guide has been taken. It is now being tried out by three of four anthropologists on field expeditions, to test its usefulness and to see how it could be modified and made more systematic.

3. *Studies of factors and criteria in assessing the potential for change within a community, and in assessing the actual rate of change in a community.* These are two different types of study, but one aim in common could be to substantiate the point (Mead, Cravioto) that the rate of change is an important piece of information. Any policy-maker or leader of a field team wants to know the rate of change in relation to what he is going to do, how much effort it is going to take, and when to start or intensify effort. There are a number of examples of projects not going well because they have either been done too quickly or, more commonly, too slowly, because the optimal or possible or actual rates of change were not adequately assessed.

Directly comparable studies exist in the field of economic development. Rostow's recent book¹ goes a considerable way towards taking into account the socio-political and sociological as

¹Rostow, W. W. (1960) *Stages of economic development*. University Press, Cambridge.

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well as primarily economic phenomena in change. The type of study suggested should go the whole way in these areas either at community or national level. Projects would be difficult and expensive, but the concept of rate of change has very great importance in relation to social planning and policy-making of any kind.

There have been examples of countries where there was evidently a greater potential or readiness for change in one cultural area, or sector of community life, than in another. In such circumstances the differences could be studied with great advantage. The apparently stable, or even reactionary community may have a considerable latent potential for change. Readiness for change is not, of course, necessarily good; sometimes it can be disastrous.

KLINEBERG : If it is true that certain kinds of individuals in a community are more ready for change than others—people, who, quite apart from variables like economic, occupational and educational backgrounds are willing to take the risk of trying something new—then they also will be one of the possible variables included in a study of this kind.

4. *Studies to establish criteria for types and levels of change in food habits*—which would contrast what might be called ‘adaptive conformity’ with some more fundamental and less easily-reversible type of change. An example would be the studies by Redl and Lipitt on delinquent boys, who learned in about a fortnight to conform to the manners of a particular reformatory camp.¹ But this had no real meaning in terms of any fundamental changes of attitude or behaviour when they returned to their own community. Work in this area might be a case study over time, but the topic could also be tackled experimentally. The Puerto Ricans in the USA who are flexible and very adaptable, adopt many of the dietary-pattern changes, and other changes too, including the father taking care of the baby. However, when they return to Puerto Rico, these efforts in conformity disappear.

The studies would not necessarily be deep individual case studies, but would involve the proper selection of experimental

¹Polansky, N., Lippitt, R., and Redl, F. (1950) An investigation of behavioural contagion in groups. *Hum. Relat.*, Vol. 3, p. 319.

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communities which might be exposed to certain changes, and could be watched, so that the permanence or otherwise of the reactions could be recorded.

CRAVIOTO : The interviewers from our village go to training schools and stay for the greater part of a year, and then go back at the end of the year to their own environment and their own diet. We can observe the changes that have taken place after their year in the school, not only with respect to the food there. Groups of that sort would provide interesting studies.

5. *Psychological or psycho-dynamic study of factors in the early formation of food habits in relation to later flexibility or inflexibility of the dietary pattern.* From such a study, much might be learned about inducing increased flexibility or preventing excessive inflexibility, for various clinical or nutritional purposes.

We know that some mother tongues, and some methods of teaching them, favour or hinder the learning of other languages. Similarly, the mode of formation and the nature of the first dietary pattern seem to be influential in setting a dietary style for the individual which he retains rigidly, or relinquishes easily.

The relative stability of immigrant Hungarian or Middle Eastern food habits (where there is a great emphasis on flavour) suggests that there may be some very precise biochemical components involved which we do not know about. The possibility would have to be explored by nutritionists as well as by social scientists. The problem of moving people who have been fed on a highly sophisticated diet, to a bland or a dull diet, may turn out to be far more serious than we imagine at present.

KLINEBERG : This kind of study would have to be done in relation to many other attitudes towards change in the culture. There may be aspects of the culture that are 'inward-looking' or 'outward-looking'. The manner in which the diet was learned, or even the emotional concomitants of the first feeding, are not the only factors influencing future behaviour in regard to food habits.

6. *Studies in attitudes towards breast feeding: the decline of,*

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and the return to breast feeding in different parts of the world. This is such an important problem to the nutritionist and paediatrician that it is well worth specific study. It is tied up with all sorts of experiences, some of which were described in *Male and Female*,¹ and also with role relationships between husband and wife in different countries.

G Y Ö R G Y : It is not only a psychological problem, but a biochemical problem, which we have not yet resolved in terms of the superiority of human milk over cow's milk.

J E L L I F F E : A comparative study carried out in a technically developing part of the world, especially an urban area where breast feeding is declining disastrously and in the opposite situation—an area in the technically over-developed part of the world, where there are indications of a swing back—would be most important.

B U R T O N : The Soviet countries, which have taken great pains to preserve breast feeding, might have much to contribute on this problem.

Category C—Studies with a predominantly socio-psychological character

1. *A comparative study of patterns of change-agents.* There are differences between people with respect to the extent to which they influence others around them, and there are, in a particular society, people who might be called change-agents. The nature and distribution of change-agents is not consistent from one community or culture to another. Comparative studies of the agents and patterns of influence in various communities would be valuable.

A further step might be personality studies of those individuals who, in any given society, are found to be change-agents for a particular type of idea (Horine). The investigation would include the diffusion of ideas. Some work has already been done in both the British and the American armies with regard to rumour and how it gets around. There was also a study in the USA on the way

¹Mead, M. (1955) *Male and female* The New American Library, New York.

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in which new drugs were used by doctors, from which, incidentally, the concept of two types of change-agent, the 'innovators', and the 'influentials', originated (Klineberg).

2. *Studies of the value of formal and informal channels of communication with respect to health and food information.* Some assessment of the way in which bringers of information—doctors, nurses, various types of field workers—are received, and how the attitudes of the recipients affect the assimilation or the rejection of the information, would be illuminating.

There is evidence that lay people vary very much in their perception of the role of a nurse or doctor or field worker, and their preconceptions may greatly influence what is actually transmitted or communicated.

For instance, a lot could be learned by comparing the attitudes towards and the behaviour of several doctors in the same community. How often have we heard a doctor say 'My patients never talk like that to me', and it is perfectly obvious why!

3. *Studies directed towards devising means of describing, contrasting or 'composing' dietary patterns.* Some method of notation (as in music or mathematics) is needed for describing the main characteristics of a diet as experienced by the consumer—the proportions of liquid and solid, the texture, the taste, the consistency—so that comparison might be possible and the probable acceptability of various forms of change could be assessed. The notation would cover the whole diet including the staples and all the subsidiary items. For instance, it is probable that the order of events in the pattern of a main Western-type meal may have some socio-psychological or subjective meaning, which is not explained in terms of physiological need or the activation of gastric function.

DEAN : Before the war, when the possibilities of rationing were studied in England, it was found that people might change their food habits on the basis of the bulk rather than the quality of the food they were eating. The concept of a 'kind of food' is directly related to the possibility of practical action. For example, in an African diet, can fat substitute for bulk? Both give a full feeling, but in a different way.

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Category D—Data-collecting studies

1. *Study of field methods, and of results obtained with different types of investigator.* An example would be examination of the scope and limits set by different types of relationship—in terms of social and cultural differences and distances—between informants and an investigator. The questions that need to be answered include: When is it a good idea to have the research done by someone from the group under investigation? Who is the best collector of data, and what are the best circumstances for the collection of data? Today, many local people are being trained as investigators in developing countries. It is assumed that they are the best people to do the research because they already know the language, but they may, for example, cause problems because of their familiarity. In England, housewives are often more willing to discuss matters with an English-speaking foreigner than with English investigators.
2. *Comparative studies of how collections of data, obtained by described and defined methods, fit into different conceptual frameworks.* Unconscious assumptions—for example, seeing what you believe—are a risk in any field of investigation. In collecting data the approach or method may fail to make contact with important aspects of the problem under investigation. To what extent, when we come to evaluating data, are we sure that our evaluation will be unbiased? Research workers studying the practices of a different culture or sub-culture may make unwitting interpretations of what they see. Thus, when a woman is said to behave 'awkwardly' towards a child, on what basis is her behaviour classified?

Category E—Studies of conditions necessary for multi-disciplinary projects, either in research or training.

Studies of the objectives, phases of mutual learning, and phases of mutual adaptation within multiple research teams (in effect, an expansion of the work summarized in the Russell Sage Foundation Annual Report for 1959) are urgently needed.

The practical importance of studies of this kind is obvious. Because of the complex nature of nutritional patterns everybody wishes, where possible, to use a multi-disciplinary approach, but we have learned very little about the basic conditions needed for

Further Problems and Possibilities

team-work. Problems of communication among different members of a research team, of the cross-translation of their technical languages, are great. The way by which statements by a member of one discipline can be made understandable to another member of the team need exploration (Klineberg). The only thing we know is that a multi-disciplinary team is extremely difficult to run. We can perhaps learn more by studying it as if it were a thoroughly awkward village community.

Finally, *the problem of evaluation* needs attention. Adequate methods of determining project-effects, direct and indirect, intended or unexpected still need to be devised. A study which might be called *An Evaluation of Evaluation Methods* is therefore our last suggestion.

An important recent publication¹ in another field by a member of the Harvard Business School painfully goes through all the rather phoney methods that have been attempted to evaluate the development of managers. The author ends up by saying in effect that the whole thing is terribly difficult; but he is known to be well-informed and reliable and his opinion, vague as it is, is valuable. Although work of this kind may sound like a waste of time, if it is well done by a recognized authority, it can be an immense help to administrators and civil servants handling circumstances in which conventional 'scientific' data are not appropriate.

Evaluation is not just a final procedure, but should be built in to a programme of nutritional improvement from the beginning, for there are certain types of measurement that must be made at the start and repeated from time to time (Klineberg). Hence the importance of defining, at the beginning, stage-by-stage objectives that can be used later in evaluating progress (Horine).

SCRIMSHAW : In our efforts to determine whether nutritional improvement influences morbidity and mortality from disease, the first objective is to improve the nutritional status of the children and the first evaluation is therefore concerned with the changes in the heights and weights of the children. But when the aim is to control disease in order to establish the relationship

¹Andrews, K. (1957) Is management training effective? *Harvard Bus. Rev.*

Suggestions for further Research

between disease and nutritional status, the first evaluation deals with the changes in the morbidity and mortality rates.

BURTON : I find that in the government projects and the international agencies very little practical evaluation is in fact carried out. There are very good human reasons for the omission. Not only are there inherent difficulties of technique and time scale, but government enterprises must succeed. People would rather start another scheme than do an evaluation which may arouse strong criticism or may cost them their jobs. Industry does not expect constant success in its projects. It analyses results but if they are disappointing it can scrap the scheme and get on with the next one. But the civil servant doing evaluation is in a completely different position.

HUNDLEY : In an international effort, with many groups dealing with segments of a common problem, attention must be called to the necessity for using approaches and techniques which, if not deliberately standardized, have at least some comparability. Otherwise, it is very difficult to make any form of synthesis of the various results.

KLINEBERG : The basic question is : Who is to carry out all these important ideas? At a meeting of this kind, people who are working in different areas meet, and get to know a little about what the others are doing. Later, they can communicate and may even set up comparable studies. No organization is needed by them, to ensure comparability. In other cases, where a more co-ordinated type of research is needed, that is exceedingly difficult to arrange.

SCRIMSHAW : The first Macy conference held in Jamaica has proved, in retrospect, to have been very successful, because it stimulated just this type of continuous informal exchange of information, criteria, standards, results and so forth, and resulted in much more rapid progress in the whole field of protein malnutrition than would have occurred without the conference. Yet, at that conference, there was no formal standardization of diagnoses or techniques.

DEAN : We have not talked enough about the success of the advertising campaign as shown, for example, in the increase in

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the use of soft drinks—obviously the result of very careful planning. Can we get in ahead with something worth advertising? WILSON : The spread of the use of soft drinks is almost as universal as the decline of breast feeding and provides a fascinating study. How to get the best out of help from commercial practice, without some of its side-effects, would be well worth investigating. The 'selling' of Incaparina or the biscuits used at Tlaltizapan could provide opportunities for trying out the relative success of different techniques. There are a fair number of commercial concerns who would be willing to talk about matters of this kind.

KLINEBERG : What is needed is an exploration of how and when commercial techniques can be used, without assuming, to start with, that these techniques offer the best way to proceed.

BURTON : Changing a nutritional habit and selling a product are possibly two completely different operations. All sorts of methods may be used to sell a product, but the main thing seems to be that the commercial world is prepared to spend the money and to put people in the field to do the job.

HORINE : If commercial enterprise captures as much as five to ten percent of the 'audience', this is often more than enough to guarantee success, whereas in the field of public health nutrition, much more of the 'market' needs to be captured if we are to get the results we want.

MEAD : The building up of the background by continuous repetition of the same idea in different ways is probably more important than copying commercial methods. With a good co-operative relationship between nutrition and government agencies, and the commercial firms dealing with food, nobody was against 'nutrition' by the end of the second World War. Nothing more might be done, but it was known that 'nutrition' was a good word.

VELASCO : I have three suggestions which are essentially a plea for studies, comparable to those carried out in Uganda,¹ to be undertaken in other regions :

¹Geber, M. and Dean, R. F. A. (1957) Gesell tests on African children. *Pediatrics*, Vol. 20, p. 1055.

Suggestions for further Research

- (a) a study of the nutritional aspects of physical and emotional separation of infant and mother, in a number of different social settings,
- (b) a study of the psychological changes, during illness and recovery, in malnourished children under successful treatment, and
- (c) a study of the long-term effects of episodes of nutritional disturbances in infants.

PETERSON : I also have three suggestions :

- (a) epidemiological studies of malnutrition, including the social factors, with contemporaneous studies on the available foods and the diets of the different population groups,
- (b) studies of existing services and resources for the population, the degree to which they are used, why they are used or why they are not used, and
- (c) studies of the best types of organization & administration to meet different local problems, once some solutions have been found. Demonstration and training centres obviously come to mind; research is needed to determine the best kind.

BURTON : In certain areas, research has been done, not by special teams, but by the regular service workers. In the thousand-family study in Newcastle,¹ most of the information and the observations were collected by working health visitors. In a cancer education programme in Manchester,² involving about four million people, a test was carried out, for economic reasons, to find whether a commercial public opinion concern was needed to collect the data required, or whether the public health nurses could be used. In the end, similar results were obtained from both groups except on one or two questions where the health visitor's own position was involved. The use of the regular public health staff should be favoured, as their participation in research educates them and stimulates their interest and enthusiasm.

¹Spence, J., Walton, W. S., Miller, F. J. W., and Court, S. D. M. (1954) *A thousand families in Newcastle upon Tyne*. Oxford University Press, London.

²Paterson, R. and Aitken-Swan, J. (1954) Public opinion on cancer—a survey among women in the Manchester area. *Lancet*, 2, p. 857.

Summary

PART I — ASPECTS OF MALNUTRITION AND FOOD HABITS

THE DEFINITIONS given (pp. 3-5) show the importance of protein malnutrition as a problem in public health, and the problem is then set against the background of food supplies (pp. 9 to 18). There are limits on production imposed by climate, the soil and the inability to introduce better husbandry, and limits on consumption that result, not only from low purchasing power, but from failures to adapt to changing circumstances.

The accounts of malnutrition that follow (pp. 19-49) add some glimpses of a new dimension; they show that malnutrition often occurs as the result of the combination of medical and agricultural causes with psychological and social ones. The basic requirement is still a poor diet, but that alone would not do much more than retard growth, and the added factors must operate before a clearly recognizable state of malnutrition appears. The study of protein malnutrition has passed beyond the stage of imprecise clinical description—a stage that ended in the Jamaica conference in 1953; beyond the discussion of the merits of various proteins and their possible combinations, as set out at Princeton in 1955, and must now be enlarged to take in every aspect of the environment.

It is obvious that changes in food habits will be strongly resisted as long as the circumstances which give rise to the habits remain

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the same. Nevertheless the desire for certain kinds of change is widespread and the need for certain nutritional changes urgent. How can the desire be linked to the need by people who, at present, lack scientific knowledge and cannot see the connection between their present plight and the food they eat?

Much of our present knowledge about food habits is derived from the research and experiments carried out during the second World War, when nutritionists and social scientists worked together for the first time on the problems of maintaining and improving nutritional standards.

In addition, study of the changes that have occurred reveals the conditions necessary for successful change. It also clarifies the part the anthropologist or other social scientist can play in helping the nutritionist to plan and carry out his work wisely. Spontaneous or guided changes in food patterns are cultural changes, and as such, are part of a continuing process that demands constant review (pp. 50-62).

The nutrition worker may be puzzled by some of the ideas and beliefs of the people he wishes to help, but he should have little difficulty in recognizing certain other characteristics which are common to human beings everywhere. Among these, the protective techniques adopted by individuals and communities against various forms of stress have to be taken into account, especially in those communities which appear to be resistant or apathetic.

Among the differences inherent in individuals, and in various groups of people in a community, are their capacities as leaders or followers. Preliminary research to discover the appropriate leaders in a particular area of interest is essential. Such research is always an important part of the marketing of commercial products (pp. 63-75).

Dietary habits are learned very early in life, and the ways in which they are acquired help to determine their degree of flexibility in later life. Under certain circumstances extreme resistance to changes in food habits may be expected. Our choices of foods are expressions of ourselves—as individuals and as members of certain groups—and of our philosophy of life. Foods are classified by systems that we may imagine to be logical, but that reflect the

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concept of ourselves that we prefer, and try to maintain (pp. 76-84).

PART II—APPROACHES TO THE RELIEF OF PROTEIN MALNUTRITION

The international organizations, separately and together, have been successful to a remarkable degree in making the world aware of the magnitude of the problem of protein malnutrition, and have worked along more or less conventional lines towards its relief. They have realized that, although they must encourage the best use of familiar foods and the development of new, the education of the consumer (who is very often the producer as well) is the only force that will enable him to realize the advantage he can obtain from a change of habits. Some nutritional emergencies must be met by means that can have no place in a long-term plan, unless it is that they offer demonstrations of success that counteract apathy. Long term plans for nutritional improvement cannot succeed without the interest of governments. Considerable national investment in agriculture and related industries, in the welfare of women and children and in education is essential (pp. 87-108).

The educational problem—how to help people to make the most of their personal and environmental resources—needs as much careful preliminary investigation as the nutritional problem in any community. Just as the family doctor calls upon the medical specialist, so may the educator call upon social scientists and other specialists to help him to acquire the information he needs.

If the educator has to work on his own initiative he can go a long way towards establishing the educational 'diagnosis', provided he has been adequately trained. Once the 'diagnosis' has been made, appropriate stages of educational 'therapy' can be worked out, and possible measurements of progress defined for each stage. The first stage may have nothing to do with nutrition.

Everywhere, experience has shown that the success of nutrition education depends not so much on instruction as on actual experience of activities that interest people and provide them with

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something they value. The effect of convincing demonstrations, set up on the farmers' own land and with their help, is 'explosive' (pp. 109-31).

Much more needs to be known about food habits, especially in those countries where protein malnutrition occurs. Unfortunately, in such countries, the collection of accurate information is difficult, often because the purpose of questioning is misunderstood. Fact-finding surveys, attitude surveys and motivational studies, that have been used for the most part in the industrialized countries, could be adapted for use in more rural communities. An analysis of the by-products of market research has occasionally provided information useful to the public health nutritionist (pp. 132-41).

Because the problems are so complex, schemes of nutritional improvement demand teams composed of individuals who represent several scientific disciplines. Teams of this kind are difficult to assemble, and for various reasons, even more difficult to run. Here again the experience of the commercial world might be invoked. Success in business management depends on the ability to co-ordinate disparate talents and techniques, and the team leaders—marketing managers or 'development personnel'—are highly trained and highly rewarded.

Difficulties in team work in public health nutrition programmes will continue to occur until the training of both nutritionists and social scientists has changed. The nutritionist and the social scientist need to acquire more understanding of each other's concepts and limitations. Meanwhile, until disciplines such as applied anthropology become fully established, the social scientist in a particular health programme needs to be given time, at the outset, to prepare himself for his work (pp. 142-53).

The public health nutritionist of the future must have a comprehensive grasp of his problem, especially if one of his responsibilities is to advise national governments. The broad training described is desirable, but is not yet fully available. Meanwhile the need for nutrition workers is being met by medical and other personnel who have been able to transcend the limitations of their basic training, and by various imaginative schemes for specialized training in several countries. For many years, however, profession-

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ally trained workers will continue to be comparatively rare, and most of the influential work in the field must be entrusted to assistants whose formal education may be restricted, but who have been taught how and where they can be most effective (pp. 154-75).

There is almost infinite scope for research. Techniques for the observation of social and nutritional change must be perfected. More knowledge of every detail of social organization and the significance of food habits is an essential pre-requisite for guided change. It would, however, be unfortunate if we achieved the ability to produce change, but were incapable of a clear assessment of the implications of the results. In programmes to relieve malnutrition through alterations in food habits, the means employed and the effects obtained require regular evaluation. The methods of evaluation themselves need study and improvement.

Appendices

Background Papers

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*Appendix I*¹

<i>Fields of Knowledge</i>	<i>Social and Economic Factors involved in Nutritional Studies of Communities</i>	<i>Implications of these Studies for Training and Teaching</i>
I. The community and its culture.	(a) The pattern of social grouping: family and kinship; status; work. (b) The pattern of adjustment to the environment.	The patterns of behaviour between groups and individuals. The patterns of authority in decision making and in leadership.
II. The food situation in general.	(a) The use of local resources and the cultivation of food stuffs. (b) The impact of local markets and the buying of food at stores. (c) The ritual use of food at feasts and ceremonies.	Attitudes to economic activities and to food production, both traditional and changing. Ideas about food and its function and changing fashions in food.

¹Presented by Dr. Margaret Read in Background Paper No. 8.

<i>Fields of Knowledge</i>	<i>Social and Economic Factors involved in Nutritional Studies of Communities</i>	<i>Implications of these Studies for Training and Teaching</i>
III. Family diets: including snacks as well as habitual meals.	(a) Varying standards of living. (b) The balance between using and selling available foodstuffs. (c) The fuel situation in relation to cooking. (d) The type of family units that make up cooking and eating groups.	Methods of household management. Intelligence and ability applied to the housewives' tasks. Time available for cooking, etc. The demands of social obligations for hospitality, food exchange etc.
IV. Nutritional state of the population in general, and of children.	(a) Composition of selected households, giving number of adults and children to be fed. (b) The food of the children. (c) The food of the adults, especially wage earners and pregnant women.	Health teaching in the community: (a) General principles of adequate diets. (b) Special needs of young children. (c) Meaning and evidences of malnutrition.

Appendix 2¹

THE PERSONNEL, AND THE TYPES OF TRAINING REQUIRED FOR WORK IN NUTRITION

Level for which Training prepares (A) *Persons Working Full-time in Nutrition*

DIRECTORIAL *Personnel:* Directors of central nutrition services; senior government advisors on nutrition; professors of nutrition and heads of university nutrition departments; directors of nutrition institutes; directors of food science and food technology institutes; directors of laboratory and field research on nutrition. *Training required:* (a) Extended post-graduate training, (b) intensive training courses as a temporary expedient for training 'potential leaders' who will direct national nutrition programmes but who cannot be spared to attend a university for a prolonged period.

PROFESSIONAL *Personnel:* Nutritionists (medical and non-medical) including public health nutrition workers, nutrition teachers, nutrition organizers for field programmes; leaders of dietary survey teams; dieticians, food technologists, home economists specialized in nutrition. *Training required:* Undergraduate and often post-graduate training, the length of the latter varying from 2-4 months to 1-2 years depending on the background of the trainees and the specialization required.

AUXILIARY *Personnel:* Full-time assistants to the professional nutritionists listed above, such as non-professional members of dietary survey teams, field demonstrators in a nutrition programme, non-professional research assistants.

Training required: Special training courses and in-service training, the emphasis and duration varying according to the type of work to be carried out.

¹Included in report (prepared by FAO and WHO at the request of UNICEF) 'Training Survey, Part II: Nutrition'. (1961) United Nations Economic and Social Council E/ICEF/420/Add. 1.

<i>Level for which Training prepares</i>	<i>(B) Persons concerned with Nutrition as part of their other work</i>
DIRECTORIAL	<i>Personnel:</i> Administrators holding responsible posts in ministries and agencies of health, agriculture, economic planning, education, welfare and community development; professional leaders directing services in the above fields, including home economics and agricultural extension services, MCH services, primary and secondary education services; professors and heads of university or college departments or institutes of social medicine, public health, paediatrics, physiology, biochemistry, social anthropology, agriculture, home economics, education; directors of research in the fields mentioned above. <i>Training required:</i> (a) Relevant nutrition training introduced into under-graduate and post-graduate curricula of those professions (b) special training courses for those who have not had adequate training in nutrition.
PROFESSIONAL	<i>Personnel:</i> Public health and medical officers; paediatricians; public health nurses; social welfare and community development workers; home economists; agricultural teachers and extension agents; school teachers, social anthropologists; survey workers. <i>Training required:</i> (a) Nutrition to be introduced into their regular curricula (b) short courses in applied nutrition from 2-3 weeks to 3 months for in-service and refresher training.
AUXILIARY	<i>Personnel:</i> Workers at local level who have not received professional training, but who are in touch with families and the community and can therefore make a practical contribution to various aspects of a nutrition programme. These include health and sanitary assistants, community development assistants and other multi-purpose workers such as <i>gram servikas</i> (India), local midwives, school teachers, agricultural demonstrators, co-operative officers, home visitors, women's clubs and other community leaders. <i>Training required:</i> (a) Applied nutrition introduced into their general training (b) special courses and in-service training in the practical aspects of nutrition.



Appendix 3

CURRICULUM OF THE SCHOOL FOR NUTRITIONISTS AND DIETICIANS, BOGOR, INDONESIA

Subjects	Total No. of hours	First Year		Second Year		Third Year	
		A ¹	B	A	B	A	B
		Semester		Semester		Semester	
1. Anatomy, Physiology, Microbiology, Pathology	200	x ²	x	x	x	x	
2. Chemistry, Biochemistry, Food chemistry	200	x	x	x	x	x	
3. Chemistry (laboratory)	300	xx	xx	xx	xx	xx	
4. Clinical Pathology: adults	120			x	x	x	
children	120			x	x	x	
5. Public Health	120			x	x	x	
6. Knowledge of food	120	x	x	x			
7. Food preparation (labora- tory and kitchen)	120	xx	xx				
8. Food management, Insti- tutional management	80				x	x	
9. Food Technology	80				x	x	
10. Sociology, including psychology	120		x	x	x		
11. Home economics	80	x	x				
12. Economy	80	x	x				
13. Statistics	120	x	x	x			
14. Agricultural practices	40	x					
15. Nutrition:							
minor	80	x	x				
major, food problems, nutrition surveys	120			x	x	x	
16. Nutrition education	120			x	x	x	
17. Field work ³	2 weeks	x		x			
	6 months						x

¹A means 1st semester

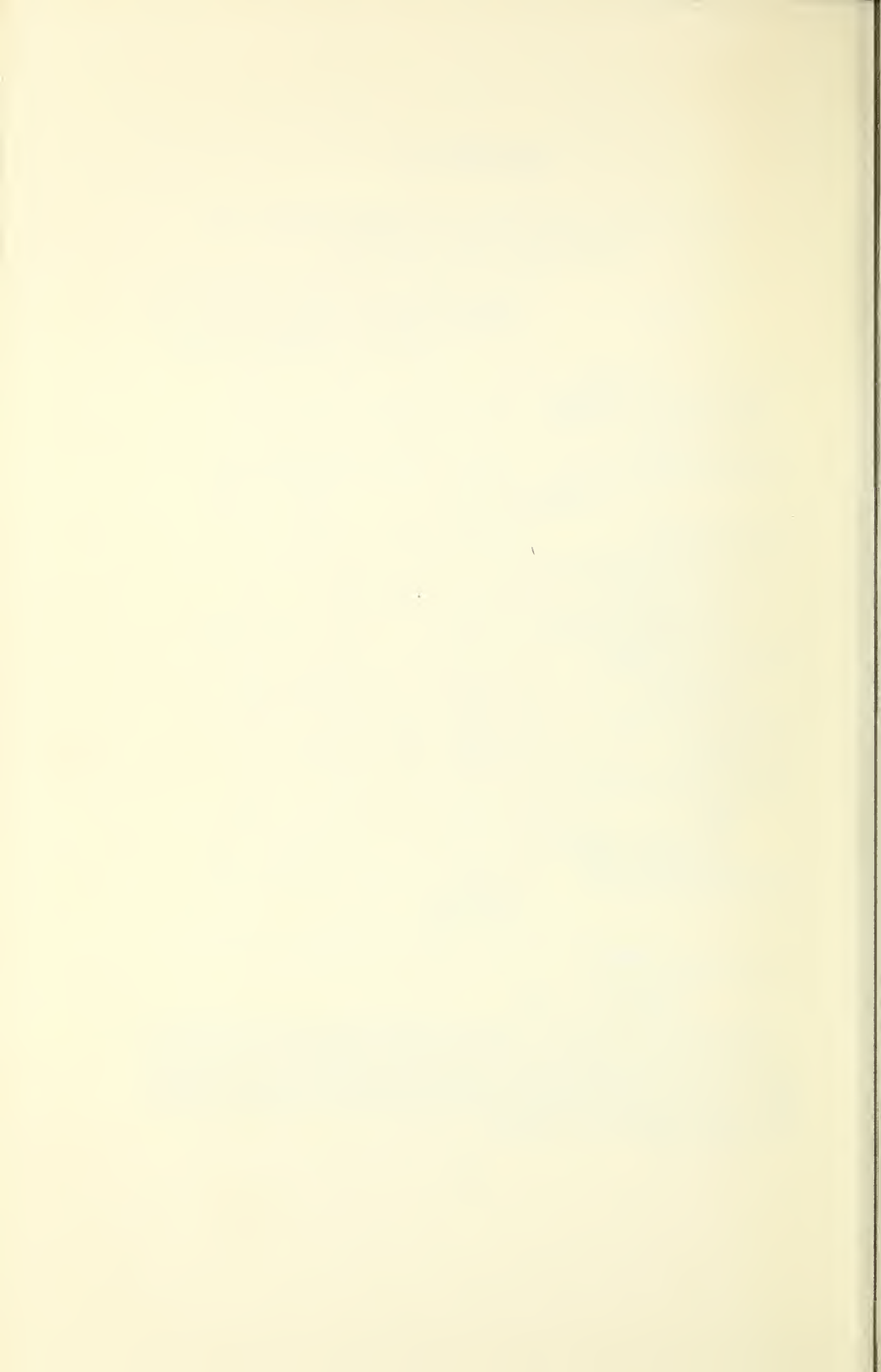
B " 2nd "

²x " 2 × 50 minutes a week

xx " 3 × 60 " "

Each student has to present a thesis at the end of the third year, on which he is examined by a Committee of Teachers. The training for dieticians and nutritionists is the same in the first year. In the second and third years the dieticians spend more time on food preparation and less on nutrition, and none on statistics. They take the same field work in the first and second years, but in the third year they work in a hospital for 6 months.

³See text, p. 170.



Background Papers

1. Malnutrition as a Public Health Problem : with Special Reference to Protein Malnutrition in Young Children, by the Nutrition Unit, World Health Organization.
2. Food Production, Food Habits and Consumption, and Malnutrition, by the Nutrition Division, Food and Agriculture Organization of the United Nations.
3. An Approach to the Improvement of Diet, by Isabel Kelly.
4. The Contribution of Cultural Anthropology to Nutrition, by Margaret Mead, with two appendices :
 - A. Cultural Contexts of Nutritional Patterns by Margaret Mead. Reprinted from Centennial Collected Papers, presented at the Centennial Celebration, Washington, D.C. 1948.
 - B. Cultural Patterning of Nutritionally Relevant Behaviour, by Margaret Mead. Reprinted from *J. Amer. dietet. Ass.* Vol. 25, pp. 677-80, 1949.
5. The Introduction of the Potato in Ireland and England, by John Burton.
6. An Expert in Public Opinion Surveys Comments on the Psychosociology of Food, by Jean Stoetzel.
7. Nutrition Education in Public Health Programmes—What have we learned? by Anne Burgess.
8. Training Nutrition Workers in the Field, by Margaret Read.
9. Change Processes : Some Examples and Comments from Commercial Marketing Practice and from Collaborative Social Research, by A. T. M. Wilson.

Background Papers

10. The Training of Nutritionists, by W. H. Sebrell, Jr.
11. Brief Report on Research Project in Tlaltizapan, by Federico Gómez.
12. The Popular Concept of the Causes of Communicable Diseases, by Joaquin Cravioto *et al.*
13. Memorandum for the Cuernavaca Conference, by C. G. King.
14. Culture and Nutritional Advice in the Netherlands, by C. den Hartog.
15. Some Material for a Study of the Difficulties in Changing Food Habits in Rural and Industrial Areas of West Bengal, by K. P. Chattopadhyaya.

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